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ABSTRACT

This environmental curriculum guide is designed for teacher use in the sixth grade. A collection of multidisciplinary activities, guidelines for conducting field trips, and a resource section are included. The activities are organized within three categories--awareness, man's use, and problem solving. They are designed to provide the student with opportunities to make observations, collect and record data, interpret the data, and summarize. The use of these activities, either individually or in sequence, aims to establish a climate of pupil participation, discussion, and interaction. Each activity is classified by topic, subject, completion time, and grade level. All activities include: objectives, a materials list, teacher background information, a preactivity, the activity, a postactivity, and additional activities. Guidelines for conducting field trips are included to facilitate the teacher in teaching her students in the out-of-doors. The guidelines cover pre-field trip, field trip, and post-field trip planning. The resource section lists speakers, films, free and inexpensive materials, pamphlets, and conservation and environmental groups which may be contacted for information about environmental topics. (TK)

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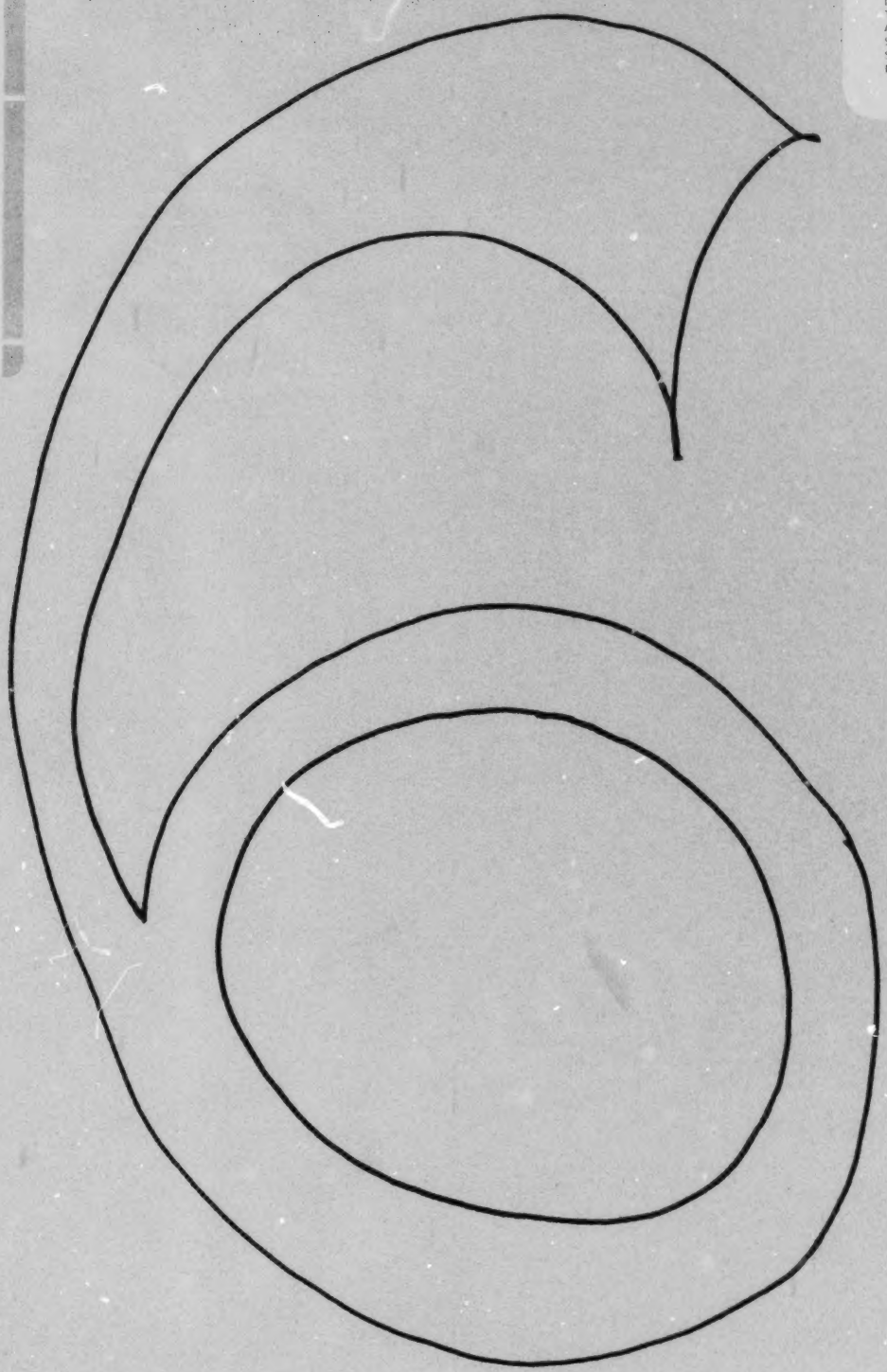

SE 018 294

ED 099221

A MULTIDISCIPLINARY PROCESS

CURRICULUM IN ENVIRONMENTAL EDUCATION

K - 12

Under Provision of Public Law 91-516, Grant No. OEG-0-72-5436

Project No. RO 21178

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Lynnwood, Washington

1973

PROJECT SUMMARY

This project was designed to provide a working model for the structure and implementation of a multidisciplinary process curriculum in environmental education, grades K-12. This model emphasizes the broadly based socio-ecological approach endorsed by the Edmonds School District Environmental Education Council, as a unifying theme to be incorporated into a comprehensive environmental program. Such an approach seeks to integrate the cultural, historical, and social aspects of man with fundamental sociological principles applicable to all living organisms. It will utilize the school and total community as a field laboratory and as a basis for the investigation of ecological relationships and environmental problems. The design of the model presented here includes five phases which have been sequentially organized into the following areas:

1. To plan for the structure of appropriate training and student activities as designed by two writing teams selected on the basis of defined qualifications. The participating teams represented each grade level, K-6, and each relevant secondary discipline, 7-12. The team consulted with community, local, state, and natural resource personnel and incorporated existing materials into a total program that reflects the objectives established.

2. A plan for implementing the materials written by means of training sessions at the elementary building level and for the specific secondary disciplines and secondary teachers involved. The writing team will form a nucleus for the training of teachers in use of materials and equipment.

3. A plan to evaluate the effectiveness of materials and methods used through formal and informal feedback from students and teachers involved. Students will be evaluated on the cognitive aspects of the curriculum materials written and both teachers and students on the attitudinal aspects.

4. A plan for revision and retraining as necessitated by the analysis of evaluation procedures and results, and from community feedback.

5. A plan to continue the program utilizing district and community funds under the guidance of the Edmonds District No. 15 Environmental Council in cooperation with the District Environmental Consultant.

This project is a "beginning". It was written during four weeks of the summer of 1973. The writing team realizes that they have just scratched the surface of putting together a K-12 multidisciplinary environmental education curriculum. We know that it needs to be tried by teachers, and hope that you will use it while instructing your students. Try it out! Write in it and jot down your notes. Revise, add and delete! Then give us feedback as to how you used it and how you felt about the whole thing so that we can work your ideas into our revision next summer. There are extra lesson outlines in the back to experiment with. Now -- enjoy!

Grades 3, 4, 5 and 6

INTRODUCTION

This is a series of lessons which are still in rough draft form. We would encourage you to use, refine, revise, delete and add to these lessons. They are only as good as your ideas make them. To be of greatest value, the lessons should undergo continuous revisions for improvement. Please use the open spaces on the lesson plans, and the forms at the end of this section, to make your own notes and lessons. Many minds are better than few!

We have attempted to provide opportunities for the student to make observations, collect and record data, make some interpretations of the data, and summarize. The activities were designed to emphasize this process, thus developing the ability of each student to think for himself. The use of a certain question sequence facilitates this thinking process. It can establish a learning climate which will foster pupil participation, discussion and interaction. It can allow students to interpret their own observations and record data. In recognition of the high quality Environmental Education materials previously published by Edmonds School District #15 and surrounding school districts, it was decided to concentrate our efforts on activities and processes which seemed to be new material.

Many lessons include task cards for student use. The advantages of a task card over a work sheet are: 1) They are more manageable for use in the field; 2) Students are more free to collect their own data, since directions are kept simple and open-ended, and are printed on the card; 3) The task seems attainable at the outset, and students are able to experience a sense of completion and success at the end; 4) By having only one task card per group, fewer records need be kept by the children and the adult in charge.

Litter Lessons are identified by the torn paper design in the upper right-hand corner of the page. They will appear this way throughout the various grade levels of three through six.

The entire litter section of the curriculum project was funded by the State of Washington Department of Ecology, and drawn up by the Federal Project Environmental Education Writing Team during the summer of 1973. The litter sections are a part of the overall Environmental Education Federal Project. It is hoped that it will provide additional environmental awareness among children at the elementary level.

Medieval Times

TOPIC: Adaptation
SUBJECTS: Science, Math
EST. TIME: 30 minutes
GRADE: 6

AW

HUMAN ADAPTATION

Activity

PRE-ACTIVITY (10 minutes)

Discuss man's adaptation to his environment, from the beginning. Hopefully, students will mention the fact that man has a thumb on each hand which has allowed him to do many things. Or use pictures to illustrate different "Animal Hands."

ACTIVITY (10 minutes, then an hour or more.)

Have class tape their thumbs to the side of hand and continue usual routines and projects for one day.

POST-ACTIVITY (10 minutes)

Discuss problems encountered in trying to write, eat, play, etc.

How did you learn to adapt to not using your thumb?

SUGGESTED ADDITIONAL ACTIVITIES

Have an amputee come in and speak to the class about adjustments.

LEVEL V OBJECTIVE

1. The student will understand relationships between different species.

2. The student will understand adaptations of animals (and humans).

LEVEL VI OBJECTIVE

The student will know the importance of the opposing thumb as an adaptation to our daily activities.

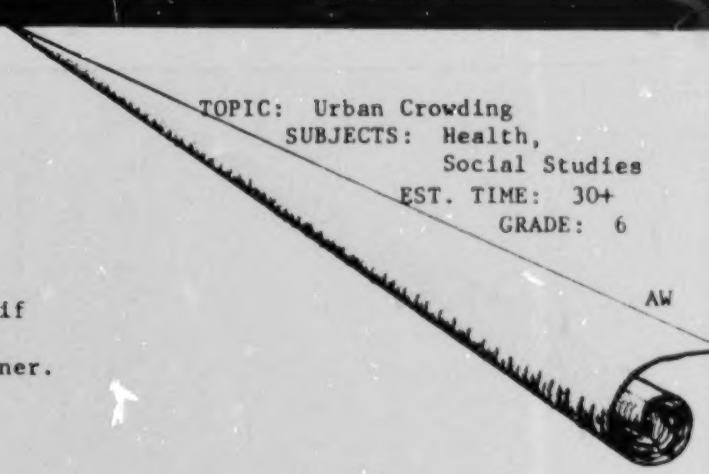
Materials

MATERIALS

Masking tape

TOPIC: Urban Crowding
SUBJECTS: Health,
Social Studies
EST. TIME: 30+
GRADE: 6

AW



PRE-ACTIVITY (5-10 minutes)

Discuss what you think would happen if we put all our desks on 1/2 of the room and conducted class in this manner.

CROWDING

ACTIVITY (15 minutes +)

Move all desks to 1/2 of the room. Then continue daily plans as usual.

POST-ACTIVITY (10 minutes)

Did the noise level increase? Did your temper get short? Did it take more time to get places such as recess, etc.? Were you bumping into things and people. Did you feel you had lost some privacy? Were you more tired at the end of the day? Were you more or less willing to share things?

SUGGESTED ADDITIONAL ACTIVITIES

Discuss and set up possible traffic patterns that could be used in the room. Try these out.

Discuss how students would feel if the class had 60 students instead of 30.

LEVEL V OBJECTIVE

1. The student will comprehend cause and effects related to decreasing diversity of life forms and human life styles.

2. The student will understand problems of population density and dispersion.

LEVEL VI OBJECTIVE

The student will know the effects of crowding in a classroom environment.

Materials

MATERIALS

Your own classroom furniture.

TEACHER BACKGROUND INFORMATION

Move all students' desks to 1/2 of the alloted space for your classroom. Conduct class in your usual manner throughout the day. Hourly have students write down how they feel and what problems they have incurred.

RESOURCES

Hold class in the gym for a day to discuss what it would be like if you had a lot of room.

TOPIC: Animals
SUBJECT: Science
EST. TIME: 90 minutes
GRADE: 6

AW

BIRDS' NESTS

PRE-ACTIVITY (30 minutes)

Go out on school site and observe bird nests or get pictures of nests from library. Have students list materials they think the bird may have used to construct their nest. Then have the students go out and gather materials they listed. Teacher should guide collection of materials so as to minimize adverse environmental impact.

Activity

ACTIVITY (45 minutes)

Divide class into work groups based on materials gathered and have them experiment with materials and construct a bird's nest.

POST-ACTIVITY (15 minutes)

Take finished birds' nests out and locate them in as natural setting as possible to see if a bird will occupy it.

SUGGESTED ADDITIONAL ACTIVITIES

Build a wasp nest with litter paper.

LEVEL V OBJECTIVE

The student will comprehend relationships among all organisms and their non-living environment (i.e. habitat).

LEVEL VI OBJECTIVE

The student will know how birds build their nests.

Materials

MATERIALS

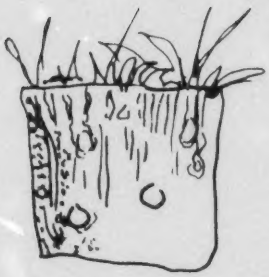
Suggested possibilities include: mud, twigs, grass clippings, thistle down, etc.

TOPIC: Soil
SUBJECTS: Science
EST. TIME: 40 minutes
GRADE: 6

AW

FROZEN SOIL

Activity



PRE-ACTIVITY (10 minutes)

Review by discussion composition of soil. Predict what will be found in soil. List predictions of sequential changes taking place as soil warms.

ACTIVITY (20 minutes +)

Go out and observe soil with hand lens. Try to scratch surface with fingers, sticks, etc. Note any animal life on soil. Describe plant life growing in the soil. Task cards on back for this part.

While soil is thawing record changes taking place. Record any animals you see. What is in the bottom of the pan? Where are the living animals going? Do animals hibernate in the soil? Measure temperatures.

POST-ACTIVITY (10 minutes)

Discuss what effect changes of temperature has on soil. Take small plant seedling of bean plant and pack it in ice for a few days. (Refrigerate not good because restricts sunlight and air.) Measure temperature changes regularly.

SUGGESTED ADDITIONAL ACTIVITIES

Discuss tundra characteristics as related to soil samply study. Discuss proposed, or possibly existing Alaska pipeline as related to freezing and thawing soil conditions. Could take soil sample as above and freeze it and compare results in freezer of thawing from natural freezing to man made freezing.

LEVEL V OBJECTIVE

1. The student will understand the composition of soil.
2. The student will understand the adaptation of animals.
3. The student will understand the relationships between organisms and their non-living environment.

LEVEL VI OBJECTIVE

The student will know the effects of soil temperature changes on the plants and animals living in the soil.

MATERIALS

Materials

Six square feet of frozen soil, 2 or 3 pieces of soil for class of 30; pan for soil to thaw in (if it takes too long to thaw, you can heat it but be sure not to fry living material); enough hand lenses per pupil; thermometers; pick and shovel for digging frozen soil. Return all soil samples, if possible, to the same spot taken from. Task cards - one per group.

TASK #1

Go to open area where soil is exposed and frozen. Complete the following observations.

1. Choose an area of soil the size of your hand.
2. Use a hand lense to observe area.
3. Record by sketching, plants and animals found in or on soil.

TASK #2

Try to scratch surface of soil with a stick, or your finger. Record results below.

FINGER STICK

TASK #3

As a class, remove a 6" wide by 6" long by 2" deep piece of soil; place and take to classroom.

TOPIC: Mud Puddle Task #1
SUBJECTS: Math, Art, Lang. Arts
EST. TIME: 30 minutes
GRADE: 6

AW

PRE-ACTIVITY (10 minutes)

Set up study area boundaries, communication signals, etc.

Divide class into task groups of 4 or 5 and/or pairs. Orally explain task if needed.

Distribute materials, Task Card, etc. (Coats, etc.)

MUD PUDDLE STUDY

Activity

ACTIVITY (10 minutes)

See Mud Puddle Task Card #1, Student's edition.

POST-ACTIVITY (10 minutes)

Collect equipment. Compare mud puddles surveyed.

1. What did you see?
2. What similarities and/or differences did you note in the mud puddle studies as to size and shape?
3. Was there any relationship between shape and diameter?
4. What general statements can we make based on our observations about mud puddles.
5. What other information might we wish to collect.

SUGGESTED ADDITIONAL ACTIVITIES

Map the location of your group's puddle as to shortest, safest, longest route, in relation to classroom.

LEVEL V OBJECTIVE

The student will know the characteristic non-living factors of fresh water.

LEVEL VI OBJECTIVE

The student will be able to measure shape, surface area and depth of a water puddle.

Materials

MATERIALS

Cloth tape measure or string; Task Card #1, Student Edition (1 per working task force); pencil and paper (1 per student in task group)

TEACHER BACKGROUND INFORMATION

See Preparation for Environmental Studies for guidelines for succesfully taking children out of doors. See Teacher and Student Editions, of tasks 1-7 of Mud Puddle Unit.

CREDITS

Ernie and Char McDonald for format and process.

TASK #1

(Working in small groups - 10 minutes)

Survey your school's playfield for mud puddles. Select one puddle and describe its shape in writing. Measure its surface diameter (using tape measure or string) and draw it in the space below.

TOPIC: Mud Puddle Task #2
SUBJECTS:
EST. TIME: 30 minutes
GRADE: 6

AW

MUD PUDDLE STUDY

PRE-ACTIVITY (10-15 minutes)

Review study area guidelines if needed. Distribute materials based on Task #1 per group or re-divide class into groups.

Teach and/or review care and use of thermometer. Construct a thermometer extension with a stick and string. Orally explain steps for tasks if needed.

Activity

ACTIVITY (10 minutes)

Do Student Task #2

POST-ACTIVITY (10 minutes)

Collect and clean equipment used. Compare data collected - discuss differences and/or similarities.

1. What are some of the results in your group work on Task #2?
2. What are some causes for (their data) .
3. What could we conclude about (data) .

SUGGESTED ADDITIONAL ACTIVITIES

Compare F° to C° thermometers. Equalize thermometers and repeat to see if data is more similar.

LEVEL V OBJECTIVE

The student will know the characteristic non-living factors of fresh water.

LEVEL VI OBJECTIVE

The student will be able to determine air and water temperature at a mini water environment.

Materials

MATERIALS

Thermometers (1 per working group); Student Task Card #2; sticks (1 per group); string 6" to 1' in length

TEACHER BACKGROUND INFORMATION

See Teacher and Student Editions of Mud Puddle Tasks 1-7.

TASK #2

(Working in small groups - 10 minutes)

Using a thermometer, collect the following information to fill in the chart below:

WATER TEMPERATURE

Edge of Puddle	
Middle of Puddle	

AIR TEMPERATURE

Over the Puddle	
Over the Land	

TOPIC: Mud Puddle Task #3
SUBJECTS: Science, Math
EST. TIME: 35 minutes
GRADE: 6

AW

MUD PUDDLE STUDY

PRE-ACTIVITY (5 minutes)

Distribute equipment. Re-divide group and/or review ground rules as needed. Review math concept of averaging if needed. Orally explain steps for Task #3 if required.

ACTIVITY (10 minutes)

Do Task #3.

POST-ACTIVITY (10-15 minutes)

Collect equipment. Average all puddle sedimentation times to get a class average.

Discuss sunlight penetration in settled or stirred vs. unstirred puddles.

SUGGESTED ADDITIONAL ACTIVITIES

Construct a simple secchi disc using a stick and boards painted white.

LEVEL V OBJECTIVE

1. The student will understand the composition of soil.
2. The student will know the characteristics of fresh water forms.

LEVEL VI OBJECTIVE

The student will be able to determine the sedimentation rate in a given water environment.

Materials

MATERIALS (One per group)

Rulers (in inches or cm.); watch with second hand, or timer; stick to stir with - may be gathered in field; Mud Puddle Task #3; water-proof boots come in handy, if possible.

TEACHER BACKGROUND INFORMATION

See Teacher and Student Task Editions #3.

TASK #3

(Working in small groups - 20 minutes)

Measure depth and sedimentation (settling time), using a stick, or a watch and a stick. Record on charts:

DEPTH (in inches or cm.)

Edge	
Middle	

	SEDIMENTATION TIME
1st Stirring	
2nd Stirring	
3rd. Stirring	
Average Time	

TOPIC: Mud Puddle Task #4
SUBJECTS: Reading, Math
Counting, Art
EST. TIME: 50+ min.
GRADE: 6

AW

PRE-ACTIVITY (20 minutes)

See Teacher Background Information.

Introduce or review water test kit usage as needed.

Divide or re-divide into task groups.
Distribute Task #4.

MUD PUDDLE STUDY

Activity

ACTIVITY (20-30 minutes)

Do Task #4.

POST-ACTIVITY (30 minutes)

Collect and clean equipment and felt pens. Using butcher paper, have each group enlarge data chart and record findings. Post around room. Have each group explain and interpret how they "went about it" and their findings. (Note: This may be done a day or so after Task completion.)

SUGGESTED ADDITIONAL ACTIVITIES

Use a soil test kit to measure soil pH around puddle and compare with water pH.

LEVEL V OBJECTIVE

The student will identify physical characteristics and composition of water.

LEVEL VI OBJECTIVE

The student will know how to determine the pH and O_2 data at given mini water environment.

Materials

MATERIALS

Water test kits, ideally one per group; pencils, one per group; Task #4, one per group.

TEACHER BACKGROUND INFORMATION

Sometimes kits may be shared between "have" and "have not" schools. Also, a method to get more kits may be devised. This task may be omitted without harm to unit.

Task groups may be rotated if you have too few kits to do in task groups or samples may be collected from each puddle right before test. Storing H_2O spoils water conditions and could affect test results.

If you use rotation plant: suggest you seek teacher aid, parent aid, or a responsible high school student to help in task.

If you choose sample collection, plan on needing an appropriate number of clean containers of equal size. Try large-size baby food jars or use kit containers (be careful not to lose the stopper on the container).

If you have never used a water test kit and preparation time is limited, use tap water for a "dry" run and/or pre-activity. (Hint: Use students to read, collect and measure to insure better attention during demonstration.)

TASK #4 (20 - 30 minutes)

Take the pH and dissolved O_2 of the water by using a water test kit.

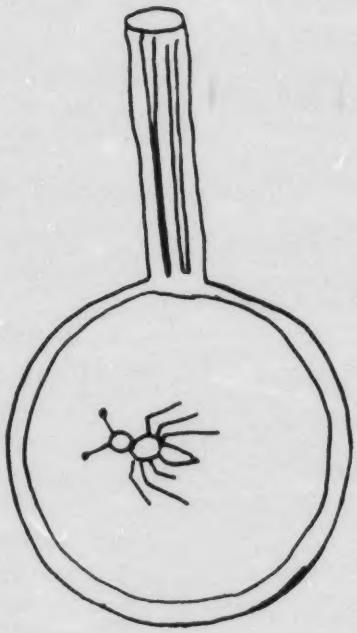
pH Reading	
Dissolved O_2	

TOPIC: Mud Puddle Task #5
SUBJECTS: Reading, Science, Counting, Art, Soc. Studies, Health
TIME: 45 min.
GRADE: 6

PRE-ACTIVITY (15 minutes)

What guidelines does our group need to set up before collecting living organisms.

Divide or re-divide class into groups. Distribute Task #5 and equipment.



MUD PUDDLE STUDY

Activity

ACTIVITY (15 minutes)

Do Task #5.

Return all "critters" to environment now or after post activity.

POST-ACTIVITY (15 minutes)

Collect and clean equipment.

Place water samples on a micro-projector or under microscopes for closer inspection. Make drawings of observations.

SUGGESTED ADDITIONAL ACTIVITIES

Discuss standing H_2O in relation to the insect population (beneficial and pests).

Discuss mosquitoes and yellow fever and malaria as part of health or Latin America-Panama Canal studies.

Discuss how water needs to be boiled or chemically purified in some areas before drinking. See Death Valley note.

Discuss travel policies concerning drinking foreign water.

Discuss the presence of insects and how they may indicate drinkability, i.e. certain springs in Death Valley.

LEVEL V OBJECTIVE

1. The student will be able to identify plants and animals of his local environment.

2. The student will comprehend relationships among all organisms and their non-living environment.

LEVEL VI OBJECTIVE

The student will know the floral and fauna inventory of a given mini water environment.

MATERIALS

Student Task #5 (1 per group); collection trays; hand lens and identification books if desired (1 per student partners within group); jelly cups, 1 per student.

Materials

TASK #5 (15 minutes)

Inventory and record any plants and animals.

Plants and Animals in a One (1) Foot Radius Out from Edge of Puddle.

Name or Describe	Number or Quantity

Plants and Animals in the Water of the Puddle.

TOPIC: Mud Puddle Task #6
SUBJECTS: Science, Math
EST. TIME: 30+ minutes
GRADE: 6

AW

MUD PUDDLE STUDY

PRE-ACTIVITY (10 minutes)

Student should be prepared adequately to work on this independently.

Instruct students to place toothpicks in a line for easier and more accurate measuring.

It may be necessary to cord off puddles and select ones off the beaten track.

Activity

ACTIVITY (5 minutes hourly)

Do Task #6. Clean up study area.

POST-ACTIVITY (20 minutes)

Collect, clean and store equipment. Discuss following.

1. What did you notice about your mud puddle?
2. What changes have occured?
3. How have these changes affected plants and animals?
4. Based on our data, what can we say about the relationship between energy and change?

SUGGESTED ADDITIONAL ACTIVITIES

Play a marble game on dry area of former puddle.

LEVEL V OBJECTIVE

1. The student will comprehend relationships among all organisms and their non-living environment.

2. The student will understand the concept of dynamic equilibrium as it applies to ecological systems.

LEVEL VI OBJECTIVE

The student will know how to measure the rate of evaporation of a given mini water environment.

MATERIALS

Clock; rulers; tape measures and/or string; toothpicks; thermometers; and Student Task #6 - per group

TEACHER BACKGROUND INFORMATION

If students have chosen a puddle on the black top, use clay "stands" for toothpicks.
Note: Toothpicks mark edge of H_2O line.

TASK #6

(Working in small groups - 5 minutes hourly)

Measure the existence time span of a mud puddle using a clock, toothpicks (colored), and thermometers.

TIME	COLOR OF TOOTHPICK USED	DIAMETER	DISTANCE BETWEEN TOOTHPICKS	AIR TEMP	H_2O TEMP

TOPIC: Mud Puddle Task #7
SUBJECTS: Math, Science, Art
EST. TIME: 80 minutes
GRADE: 6

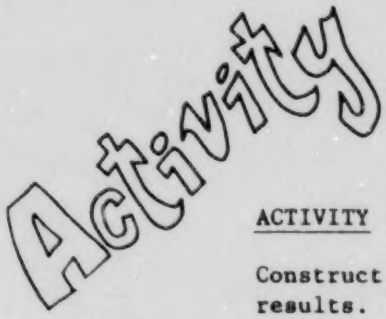
AW

MUD PUDDLE STUDY

PRE-ACTIVITY (10 minutes)

Measure and adjust equipment to size of puddle.

Work in task groups or as a class.



ACTIVITY (30 - 40 minutes)

Construct and record model H_2O cycle results.

1. Place ring stand over puddle so as to have legs on "dry" land.
2. Cover with clear plastic.
3. Place rocks and stones on plastic edges to seal.
4. Record time lapse until moisture forms on the inside of the plastic.
5. Also measure temperature.
6. Clean up study area.

POST-ACTIVITY (25 minutes)

Collect, clean and store equipment.

Have students draw a diagram of a water cycle. Equate equipment to stages and natural cycle. Note: Post-activity may be done a day or so after the activity if desired.

SUGGESTED ADDITIONAL ACTIVITIES

Discuss solar stills as a way of purifying H_2O and/or greenhouse effect.

LEVEL V OBJECTIVE

The student will comprehend relationships among all organisms and their non-living environment.

LEVEL VI OBJECTIVE

The student will know the theory of the water cycle.

MATERIALS

Scrap wood or ring stand, depending on size of puddle; clear plastic, depending on size of puddle; ice cubes.

TEACHER BACKGROUND INFORMATION

It is best to do this on a warm, hopefully somewhat sunny day.

CREDIT

As a survival skill.

TASK #7 (30 - 40 minutes)

Using a standing frame, clear plastic, and ice, construct a model demonstrating the H_2O cycle.

AWARENESS

SURVIVAL

TOPIC: Survival
SUBJECT: Health
EST. TIME: 50 minutes
GRADE: 5 or 6

COVER UP

Activity

PRE-ACTIVITY (5 minutes)

Explain directions. Put partners into bags. Give boundaries of area.

ACTIVITY (25 minutes)

Tell students to go to pre-described area with one garbage bag per two students. Each student takes a library book and one person in total group needs a watch. NO COATS. One student puts on bag. Both sit down and read for 10 minutes. Then switch garbage bag to other person for another 10 minutes. Them come in and get questions to answer from the teacher.

POST-ACTIVITY (20 minutes)

Come in and answer questions, and discuss the answers.

SUGGESTED ADDITIONAL ACTIVITIES

Cover head (but not face) and see what difference there is.

LEVEL V OBJECTIVE

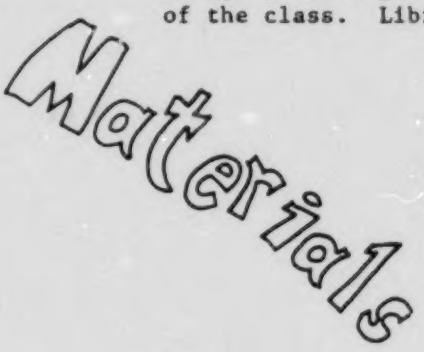
The student will perceive himself as a part of nature and will recognize his dependency on nature.

LEVEL VI OBJECTIVE

The student will know the effect of a plastic wrap upon body temperature.

MATERIALS

Enough plastic garbage can size bags for 1/2 of the class. Library books for each student.



SURVIVAL QUESTIONS FOR AFTER USING THE PLASTIC BAGS

1. How did you feel without the plastic bag?

2. How did you feel with the plastic bag?

3. How did the fact that you were sitting down effect your temperature?

4. Was there a wind? Would the wind affect the temperature?

5. What relationship is there between the bag and the warm temperature?

TOPIC: Survival
SUBJECTS: Health
EST. TIME: 30 minutes
GRADE: 5 or 6

THE NAKED TRUTH

PRE-ACTIVITY (5 minutes)

Discuss why we use 100° F. for water in cans. Predict what will happen to the temperature after 3 hours in each can. Predict which can will stay the warmest and which can will become the coldest.

ACTIVITY (15 minutes)

Upon setting up cans, have students record the temperature of each can. Cover openings with lid or some other way. Then, to simulate rain, pour water over 5 cans periodically. (The ones in plastic should not get wet.)

After 2 to 4 hours, have students take temperatures of cans again.

POST-ACTIVITY (10 minutes)

1. What was the beginning temperature of each can?
2. How did each can's temperature change?
3. Which can remained the warmest?
4. Which can became the coldest?

LEVEL V OBJECTIVE

The student will perceive himself as a part of nature and recognize his dependency on nature.

LEVEL VI OBJECTIVE

The student will know that materials such as wool and cotton affect the rate of temperature loss.

MATERIALS

5 gallon paint thinner cans or duplicating fluid cans with lids. Dress each can: two with wool, two in cotton, one left naked. Thermometer.

TEACHER BACKGROUND INFORMATION

Fill each can with water heated to 100° F. to simulate body temperature. Cover one of the cans with cotton and one of the cans with wool, with a sheet of plastic to simulate a raincoat.

RESOURCES

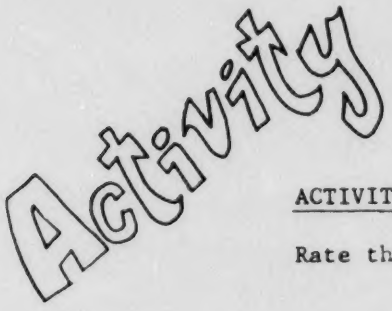
Gene Fear

TOPIC: Survival
SUBJECT: Health
EST. TIME: 25 minutes
GRADE: 5 or 6

SURVIVAL LEAD-UP

PRE-ACTIVITY (5 minutes)

Give directions and explain the problem and that you want them to rate the items.



ACTIVITY (10 minutes)

Rate the items.

POST-ACTIVITY (10 minutes)

Discuss or chart ratings by students, and reasons for their priorities. Save ratings for later.

LEVEL V OBJECTIVE

The student will perceive himself as a part of nature and recognize his dependency on nature.

LEVEL VI OBJECTIVE

Given a certain list of items and a hypothetical situation, the student will be able to list the order of importance of the items for survival.

MATERIALS

Problem statement and list of 15 items. Create the list of 15 items.

TEACHER BACKGROUND INFORMATION

With no explanation of the importance of the 15 items, have students read problem and rate the 15 items according to their importance: one is the most important, 15 the least important.

Either record whole class ratings on one chart or save each student's rating for future comparison.

RESOURCES

Gene Fear

TOPIC: Survival Wick Test
SUBJECT: Lang. Arts
EST. TIME: 55 minutes
GRADE: 5 and 6

WICK TEST

PRE-ACTIVITY (15 minutes)

Discuss the following:

1. What types of clothing did you take and wear on your last hike? List on board.

2. If you've never hiked, what kind would you take? Put in groups of 3 or 4 and have students choose a wardrobe from the list on the board that they feel would be the best one for their hiker. Pretend on the hike that the weather is nice to begin with, but it may cloud over and rain. You will be gone for 8 hours, barring unforeseen problems. If there is a piece of clothing that isn't on the board, they may use it, but must also add it to the board list. Leave this list up.

Activity

ACTIVITY (20 minutes)

Each group presents their hiker's wardrobe. Have more than one member present. Also, each group must state a reason for choosing each article of clothing they choose. Then have the class observe the pop bottles and explain verbally what they see.

POST-ACTIVITY (15 - 20 minutes)

1. How many groups dressed their hiker in wool?
2. Why are wool socks better than cotton socks?
3. Are there any items that any group wants crossed off the board now?
4. Revise your group's list to include some clothing, if not already done and turn in to the teacher.

SUGGESTED ADDITIONAL ACTIVITIES

Have students bring in other materials, polyesters, doubleknits, etc., and predict their wicking time, and then experiment as above.

LEVEL V OBJECTIVE

Student will perceive himself as a part of nature and will desire to live in harmony (dynamic balance) with the rest of nature.

LEVEL VI OBJECTIVE

The student will understand the wicking effect of water on various types of material such as wool or cotton.

Materials

MATERIALS

As many bottles as pieces of clothing you use (usually three). One piece of wool, one piece of cotton, one piece of denim (jeans). Could use cords or other material, but must have wool. One flat cake pan.

TEACHER BACKGROUND INFORMATION

While students are in groups doing the pre-activity, you can set up the pop bottles. Fill pan with 1" to 2" of water. Fasten pieces of clothing to bottles, so bottle is covered top to bottom. Place bottles in pan. In 15 minutes or so, the water will creep up (or wick up) to the top of the bottle wetting all the material. This will not happen to wool as it does not suck up the water. The wool will only wet up to the water level in the pan. Thus, wool is a great material for hikers.

RESOURCES

Gene Fear

TOPIC: Appropriate Dress
SUBJECTS: Health, Soc. Studies
EST. TIME: 55 minutes
GRADE: 5 or 6

KEEP YOUR COOL

PRE-ACTIVITY (15 minutes)

1. What types of clothing did you see on the way to school this morning?
2. What did you notice about the weather conditions today?
3. What can we say about the clothing based on the weather conditions?
4. How can we summarize our observations and discussions on weather and clothing?

ACTIVITY (20 minutes)

Break into six groups. Pass out six weather conditions. Give following directions: Each group has one weather condition; each group must decide on clothing necessary for work in their weather condition; each group must assign certain people to bring a piece of clothing for demonstration modeling; each group must choose a narrator and a person to model the clothing.

POST-ACTIVITY (20 minutes)

Each group's narrator and model will present their clothing (2-3 minute limit); at end of each presentation, rest of class will try and guess weather conditions portrayed.

Following all presentations and guesses, evaluate and discuss which clothing would be best for a school site investigation such as a stream study, pond study, nature walk, etc.

SUGGESTED ADDITIONAL ACTIVITIES

Instead of modeling, could have students draw a picture of proper clothing.

LEVEL V OBJECTIVE

1. Students will understand adaptations of plants and animals.

2. Student will perceive himself as a part of nature and will desire to live in harmony (dynamic balance) with the rest of nature.

LEVEL VI OBJECTIVE

The student will know appropriate clothing for survival under various weather conditions.

Materials

MATERIALS

Weather conditions sheet.

TEACHER BACKGROUND INFORMATION

Before going outside for an activity, be sure to go through the following activities. The success of outings can be determined by the comfort of your students.

Have students number off by six, then have all the ones meet in an area, etc., for the activity part of the lesson.

LITTER

TOPIC: Litter
SUBJECTS: Science, Math
EST. TIME: 50 minutes
GRADE: 6

PRE-ACTIVITY (20 minutes)

After discussion, students may work in small groups to design a recording device and a recording schedule.

MU

BURY LITTER

Activity

ACTIVITY (20 minutes)

In school site or at home, bury the 5 types of litter. Using a recording device, write observations.

POST-ACTIVITY (10 minutes)

Discuss observations.

SUGGESTED ADDITIONAL ACTIVITIES

This may be re-written as a Task Card.

LEVEL V OBJECTIVE

Students shall recognize litter as a pollution problem.

LEVEL VI OBJECTIVE

The student will recognize that various types of litter decompose at different rates.

Materials

MATERIALS

Five kinds of litter; a yard or ground plot to bury it in; shovel.

TEACHER BACKGROUND INFORMATION

Types of litter to be buried might include metal, plastic, paper, glass, etc. The class as a whole should discuss or brainstorm the following questions: How can we determine the rate of decomposition of litter in soil? Then they should work in small groups to design the size, thickness, etc. of the litter they will be burying and design a recording device (i.e. chart or graph), recording schedule.

TOPIC: Litter
SUBJECTS: Arts and Crafts
EST. TIME: 70 minutes
GRADE: 6

MU

PRE-ACTIVITY (10 minutes)

1. List on board containers students throw away at home (milk cartons, bread bags, pop bottles, pull tabs, etc.)

2. Designate students to bring containers from list on board.

MAKE LITTER USEFUL

Activity

ACTIVITY (40 minutes)

Put out collected items for display. Work in small groups or by self. Write down 3 possible uses for 4 of the items on the table. Discuss different uses groups had and maybe list on the board.

Have each student by self or in pairs, choose one item listed, one use for that item, and then construct something which is useable.

POST-ACTIVITY (20 minutes)

Each group or student shall display and explain finished product.

SUGGESTED ADDITIONAL ACTIVITIES

Put prices on finished products.

Write advertisments to encourage people to buy these items.

LEVEL V OBJECTIVE

The student will consider non-exploitive and non-wasteful alternatives for the use of litter.

LEVEL VI OBJECTIVE

The student will learn some ways that litter can be made into useful items.

Materials

MATERIALS (And suggested ways to use them)

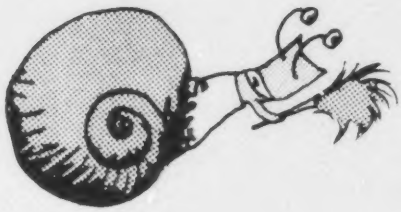
MILK CARTONS: Bird feeders, planters, paint containers, molds for candles
NEWSPAPER: Wrapping paper, folders, book covers, rubbings
EGG CARTONS: Planters for seeds, making flowers, Christmas ornaments
POPSICLE STICKS: Plant labels, coasters
PLASTIC BREAD BAGS, BAGGIES: Lunch bags, litter bags, water proofing
POP BOTTLES: Pop art, ash trays, mini terrariums
PULL TABS: Jewelry, mobiles
GUM WRAPPERS: Jewelry, art projects, science experiments (such as conductors of electricity)
BABY JARS: Organizing nails, storing spices
VITAMIN BOTTLES: Stack to make candle holders
OLD PAPERS: Papier-mache
CARDBOARD BOXES: Toys for children
OATMEAL BOXES: Felt critters
CANS: Candle holders, kitchen organizers (get different sizes of cans and glue to cork or fiber board)

TEACHER BACKGROUND INFORMATION

Designate storage area for items collected.
Items should be washed prior to bringing to school.

TOPIC: Mini Environment
SUBJECTS: Science
EST. TIME: 55 minutes
GRADE: 6

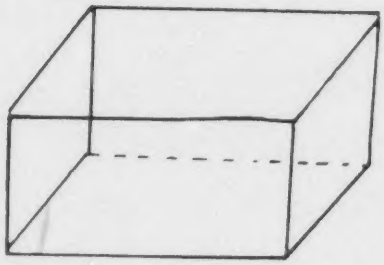
MU



LITTER TERRARIUM

PRE-ACTIVITY (25 minutes)

Discuss components of terrarium.
Construct terrarium.



Activity

ACTIVITY (20 minutes)

Plan recording device for what aquarium looks like now. Plan device for recording daily change seen in terrarium.

POST-ACTIVITY (10 minutes)

After a couple of weeks, discuss observations and data recorded.

SUGGESTED ADDITIONAL ACTIVITIES

Set up two terrariums, one with litter and one without, and compare the two.

LEVEL V OBJECTIVE

The student will understand the effects of litter.

LEVEL VI OBJECTIVE

The student will recognize the effect of litter on a mini-environment.

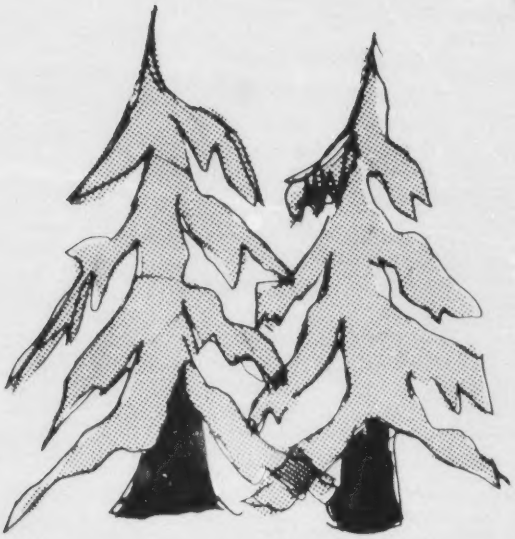
Materials

MATERIALS

Terrarium or wide mouth gallon jar. You could use gallon jars, one per four students, or the terrarium for the whole class. Plants and frogs for terrarium should be collected.

TOPIC: Litter (Local Environment)
SUBJECTS: Health, Soc. Studies
EST. TIME: 60 minutes
GRADE: 6

MU



CHECK IT OUT

PRE-ACTIVITY (15 minutes)

Review post-activity discussion for "Litter - Mini Environment." Predict types of litter you may find. Predict effects that may have occurred from previous litter, or litter found.

Activity

ACTIVITY (30 minutes)

Go out and survey environment. Record types of litter observed by using film, tape recorder, drawings, writings, collections. Record possible observable effects from litter.

POST-ACTIVITY (15 minutes)

Predict what this environment might look like, given the current rate or volume of litter found, ten years from now.

SUGGESTED ADDITIONAL ACTIVITIES

Display drawings, paintings, and pictures on bulletin board, or if you might survey later in the year, arrange scrapbook to be donated to library for future reference.

LEVEL V OBJECTIVE

The student will be able to predict future problems of litter.

LEVEL VI OBJECTIVE

Given certain types of litter, the student will predict cause and effect.

Materials

MATERIALS

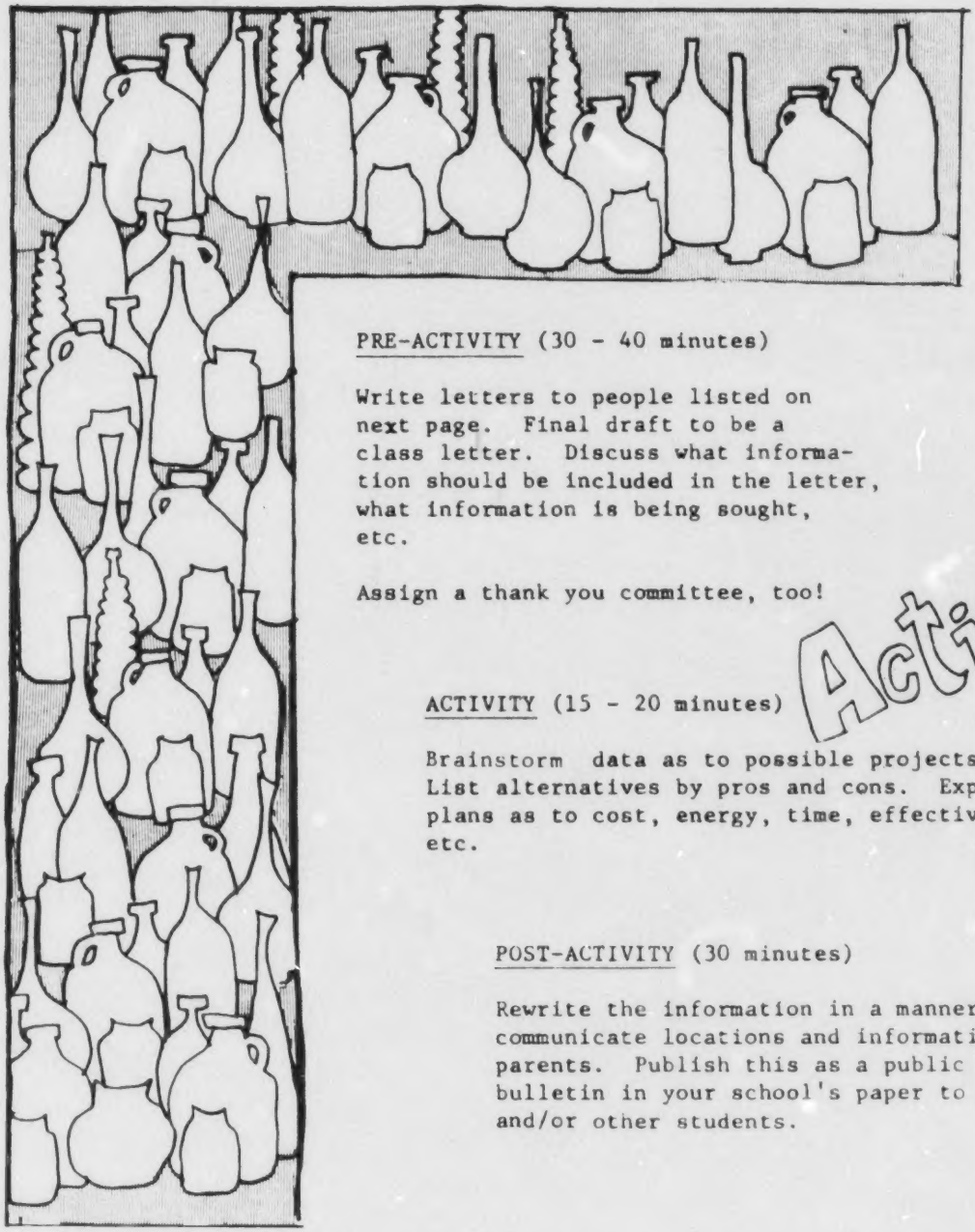
Drawing paper; pencils; tape recorders (battery operated); camera and film; record sheets for recording.

TEACHER BACKGROUND INFORMATION

Sixth grade students will choose a local meadow, forest area or park for investigation.

TOPIC: Litter Recycling
SUBJECTS: Lang. Arts, English
EST. TIME: 75+ minutes
GRADE: 6

GLASS RECYCLING



PRE-ACTIVITY (30 - 40 minutes)

Write letters to people listed on next page. Final draft to be a class letter. Discuss what information should be included in the letter, what information is being sought, etc.

Assign a thank you committee, too!

Activity

ACTIVITY (15 - 20 minutes)

Brainstorm data as to possible projects. List alternatives by pros and cons. Explore plans as to cost, energy, time, effectiveness, etc.

POST-ACTIVITY (30 minutes)

Rewrite the information in a manner that would communicate locations and information to your parents. Publish this as a public service bulletin in your school's paper to parents, and/or other students.

SUGGESTED ADDITIONAL ACTIVITIES

Repeat with other types of recycling plants.

LEVEL V OBJECTIVE

Students will understand the physical, economic and human factors involved in glass recycling.

LEVEL VI OBJECTIVE

The student will be able to communicate in writing concerns about recycling.

TEACHER BACKGROUND INFORMATION

Recommend task groups to draft sample letters, then synthesize into one class letter. Answer could be requested in _____ numbers.

GLASS RECYCLING - NORTHWESTERN GLASS
5801 E. Marginal Way South
Seattle, Washington

Thank you for your interest in the reclamation of glass containers.

Our program of re-use began in 1932 and, with today's interest in ecology, has expanded to mass participation by the public.

To enable your understanding our procedures for acceptance and to facilitate your delivery, please read the following:

1. Our acceptance hours currently are:
   Tuesdays and Thursdays: 9 to 2 pm
   Saturdays: 8 to 4:30 pm

2. Glass must be sorted by color (clear, green, and brown). Paper labels are no problem.

3. Due to excessive handling costs, we suggest you wait until you have at least 300 pounds total weight before delivering. Smaller quantities may be delivered to Seattle transfer stations, or donated to your local Boy Scout Troop. It will all end up here eventually.

4. All metal (steel and aluminum) must be removed. Any metal will contaminate production of new glass.

5. Disposal of containers used to bring glass will be the responsibility of the individual.

6. All children are to remain in cars at all times.

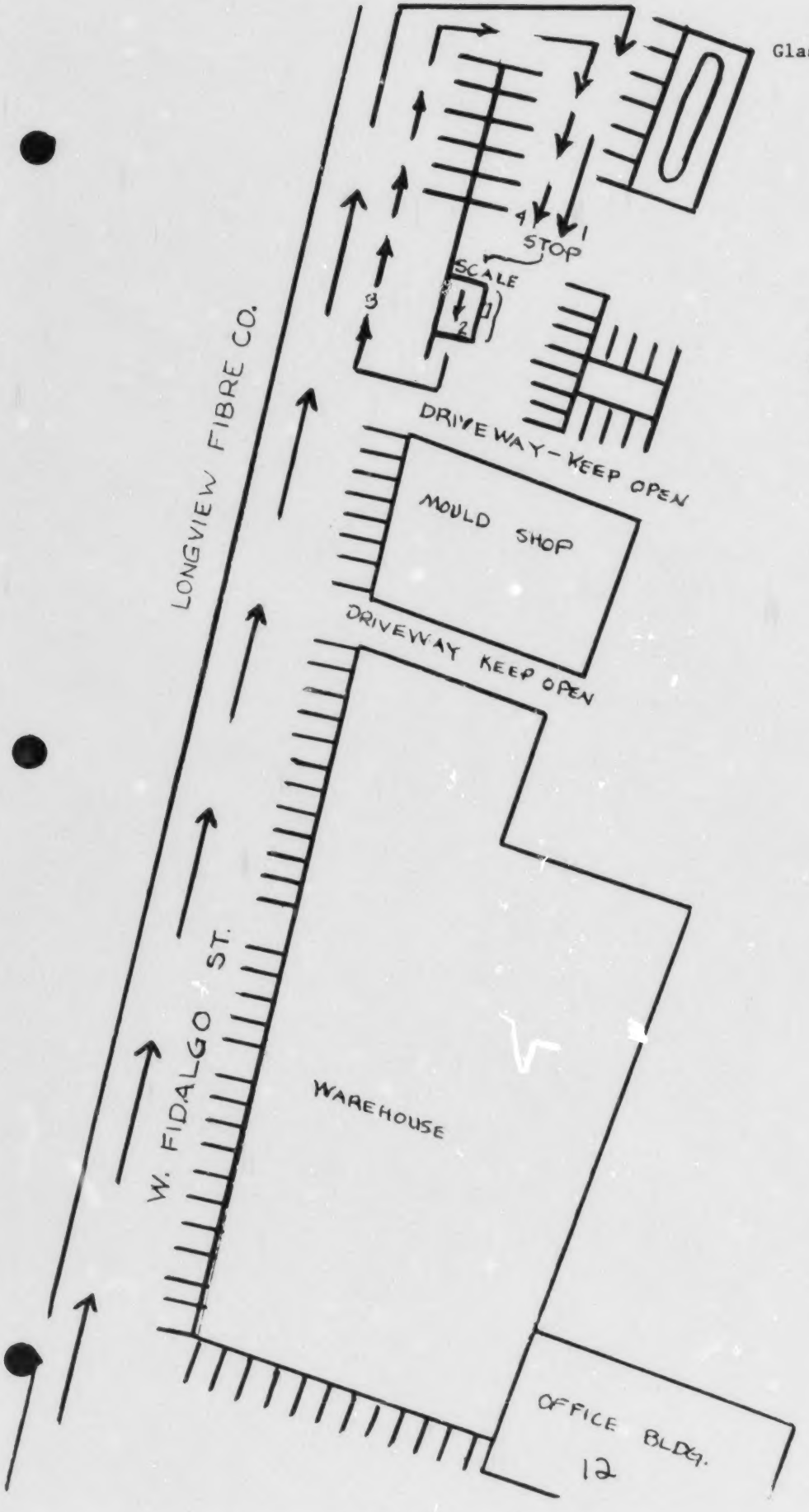
7. Non-profit groups will be paid the equivalent of 1¢ per pound ($20 per ton).

8. Checks will be mailed approximately two working days after delivery to address given to attendant on the weigh in scale.

WE ACCEPT ONLY FOOD AND BEVERAGE CONTAINER GLASS - NO FLAT GLASS.

DISPOSE OF THIS BULLETIN PROPERLY - PLEASE DO NOT LITTER

SEE ATTACHED MAP



PROCEDURE

1. STOP - WAIT FOR ATTENDANT
2. SCALE - INITIAL WEIGH-IN
3. GLASS DUMPING STATIONS
4. STOP - WAIT FOR FINAL WEIGH-IN.

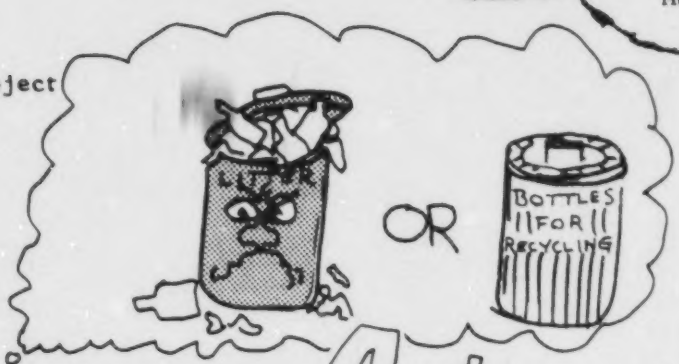
TOPIC: Litter
SUBJECTS: Creative Dramatics, Lang. Arts
EST. TIME: 70 minutes
GRADE: 6

MU

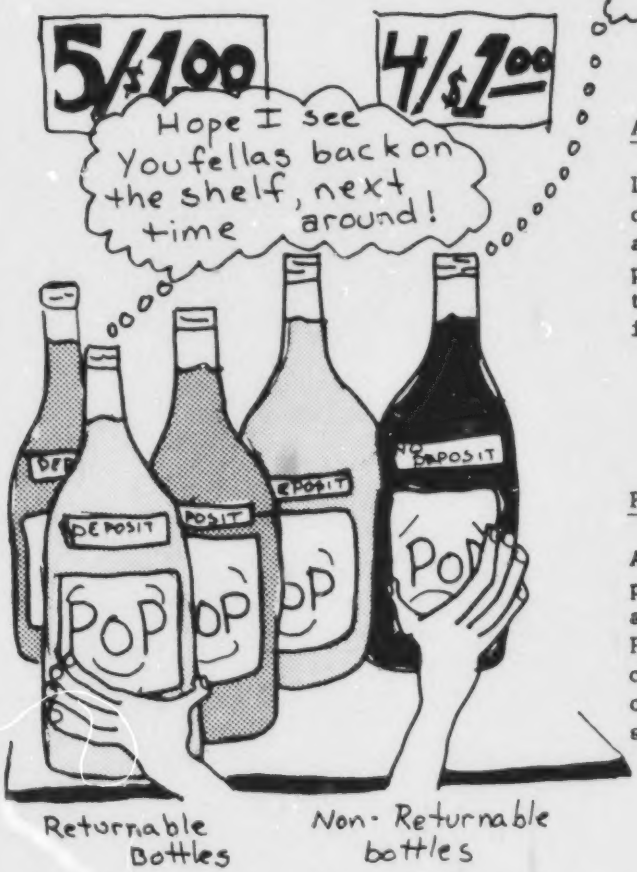
LITTER ROLE

PRE-ACTIVITY (10 minutes)

Choose object name from hat - get object and bring back to class.



Activity



ACTIVITY (20 minutes)

List in writing the observable, physical characteristics (use rulers, etc. to assist you). Make a sequential list of possible stages this article may go thru from the time it is bought until it is discarded.

POST-ACTIVITY (40 minutes)

Assume the role of this article and present a role playing situation in a pantomime, for the class to guess. Pantomime will be evaluated on following criteria: Does it convey physical characteristics, a logical sequence of stages and originality or creativity?

SUGGESTED ADDITIONAL ACTIVITIES

Research mineral resources utilized in the manufacturing of these articles.

LEVEL V OBJECTIVE

Students will be able to identify litter as a pollution problem.

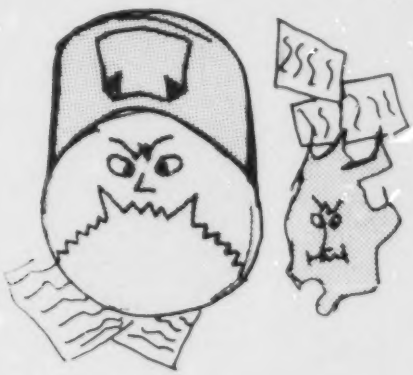
LEVEL VI OBJECTIVE

The student will know the benefits of recycling articles rather than discarding them.

TEACHER BACKGROUND INFORMATION

We recommend that students work in pairs and/or alone for this activity. You will need to prepare a list of containers frequently found as litter, i.e. pop bottles, cans, gum wrappers, etc. Write each item on a 2 x 2 slip of paper, fold and place in a "hat." (A three pound coffee can works well.) You will need as many items as pairs and/or individuals. This is a two-or three-day activity, day one being the drawing, day two being the activity and day three the post-activity.

Note: The object that is named on the slip the student draws is to be brought by the student.



Materials

MATERIALS

Names of objects (pop cans, bottles, wax paper, plastic bags, etc.) that can be put in had for choosing.

TOPIC: Traffic Pattern
SUBJECTS: Soc. Studies
EST. TIME: 60 minutes
GRADE: 6

MU

TRAFFIC PATTERNS

PRE-ACTIVITY (20 minutes)

Discuss and list data or information you may wish to collect or record on chalkboard.

Divide the class into pairs or small task groups for using Traffic Checklist.

Activity

ACTIVITY (20 minutes)

Assign areas and times to task teams or pairs. Collect data.

POST-ACTIVITY (20 minutes)

Chart results. See attached charts.
Then discuss results.

SUGGESTED ADDITIONAL ACTIVITIES

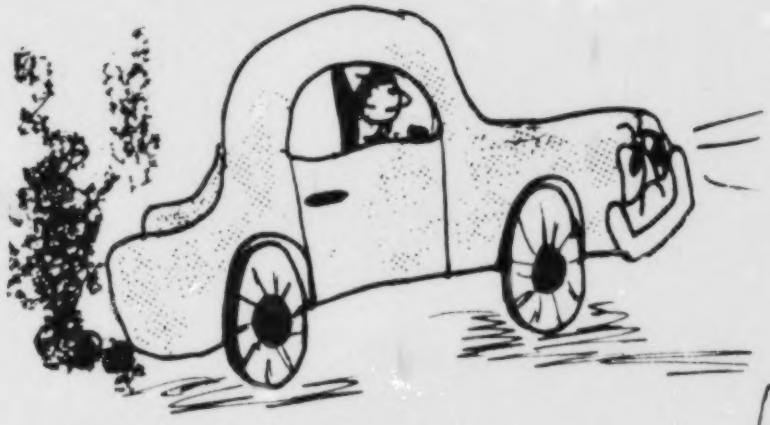
Repeat above on a weekend or at many locations.

LEVEL V OBJECTIVE

The student will be able to identify environmental problems, especially in his own local environment.

LEVEL VI OBJECTIVE

The student will be able to observe and record traffic flow data.



Materials

MATERIALS

Traffic checklist, pencil, watch, clipboard. See attached sheet for chart.

TEACHER BACKGROUND INFORMATION

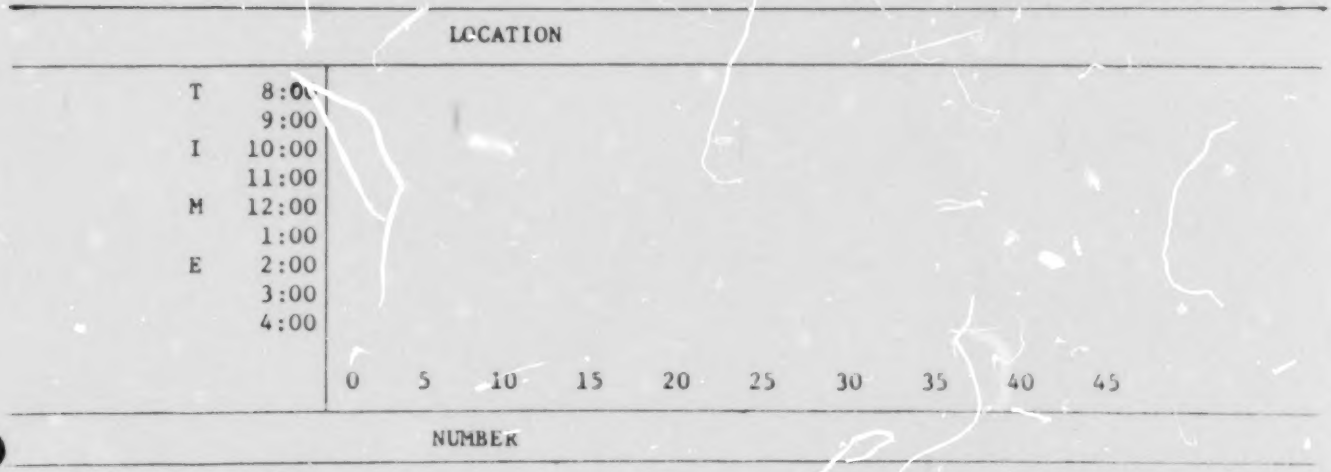
Select corners or locations carefully. Instruct students to safely collect data.

TRAFFIC CHECKLIST (place a tally mark in appropriate space)

	CARS	BUSES	TRUCKS	CAMPERS	MOTOR BIKES	BICYCLES	
NUMBER OF VEHICLES							
TOTAL							

Location: _____ Time Begun: _____

Date: _____ Time Ended: _____



TOPIC: Pollution - Ocean Dumping
SUBJECTS: Science
EST. TIME: 45 min.
GRADE: 6

MU

PRE-ACTIVITY (5 minutes)

Explain experiment and materials needed. Have students gather four types of litter, jars, etc. If students wanted to use something other than the above mentioned solutions, have the students discuss what types of water pollutions they would like to bring.

ACTIVITY (20 minutes for set-up, 5 minutes daily to check)

Place litter in jars of tap water, salt water, soapy water, or other types used. Observe weekly and record amount of decomposition. Set up one control jar for each above listed type of water and litter pollution.

Use a water test kit to test pH, O_2 of water before litter is added. Then test each day as decomposition begins.

SUGGESTED ADDITIONAL ACTIVITES

See litter section. This may be re-written as a Task Card.

LEVEL V OBJECTIVES

1. Students shall recognize ocean dumping as a pollution problem.
2. Students will know the characteristics of marine and fresh water forms.
3. Students will identify physical characteristics and composition of water such as temperature, mineral content, oxygen content (O_2), pH.

LEVEL VI OBJECTIVE

The student will know that the decomposition rate of litter varies in different types of water such as soapy water, salt water and tap water.

Materials

MATERIALS

One water test kit; four types of litter (glass, paper, metal, plastic); at least four jars per group; twelve control jars for the entire class.

TEACHER BACKGROUND INFORMATION

The four types of litter would include: metal, plastic, paper, and glass. Jars with lids and salty water, soapy water, and tap water are needed.

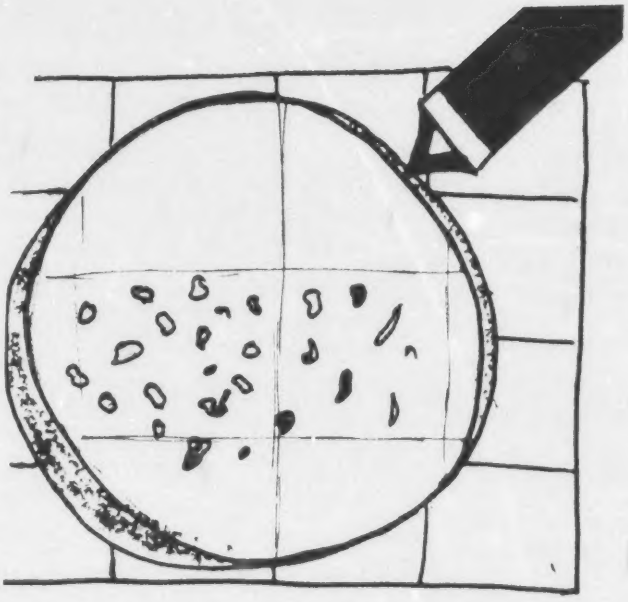
TOPIC: Air Pollution
SUBJECTS: Math, Science, Lang. Arts
EST. TIME: 55 min.
GRADE: 6

MU

AIR POLLUTION

PRE-ACTIVITY (20 minutes)

Using a pencil, divide the 6 cm.square into 1 cm.squares. Attach the paper to board with tacks. Spread petroleum jelly over wax paper. Place board in open area for one week.



ACTIVITY (20 minutes)

After One Week

Bring board back in. Examine board with magnifying glass.

Take one cm. square and count kinds and numbers of particles. Classify by color, size, etc. Construct your own chart to record your observations.

POST-ACTIVITY (15 minutes a day, 30 minutes at end of week for discussion)

Ask:

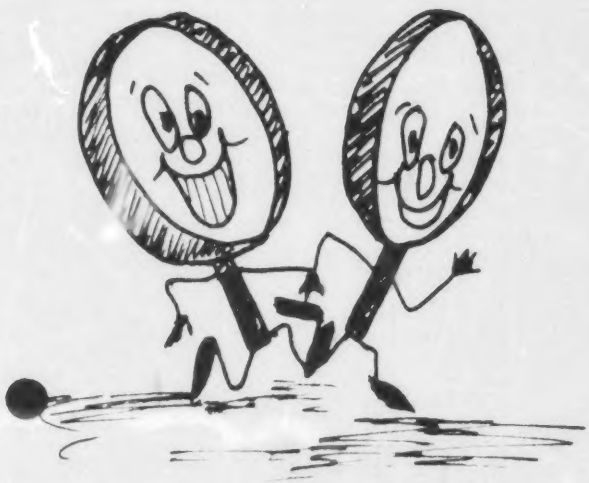
1. What did you notice about your pollution sample?

2. Discuss sources of pollution particles found, such as: industrial source, school source.

3. What can we say about the air quality around our school?

SUGGESTED ADDITIONAL ACTIVITIES

Repeat above on an individual day by day reading to determine any daily changes. Compare with week study in a chart.



LEVEL V OBJECTIVE

1. Student will recognize the various pollution problems, their causes and effects.
2. Density limits space and space affects noise levels.

LEVEL VI OBJECTIVE

The student will know that particulate matter is present in our atmosphere.

MATERIALS

Pieces of wax paper, 6 cm. square (one piece per student); petroleum jelly; pencil and metric ruler (per 2); magnifying glasses (1 per 2); boards and thumbtacks (4 per board); paper for writing observations (1 per student). Cardboard may be substituted for board.

TEACHER BACKGROUND INFORMATION

Be sure to secure boards at site where they will leave them so as to avoid blowing away - take time to go over lesson on centimeters if not used before, or adapt to inches.

CREDITS

Science and Children, Vol. 10, #6, March 1973

TOPIC: Noise Pollution
SUBJECTS: Math, Science
EST. TIME: 75 minutes
GRADE: 6

PRE-ACTIVITY (30+ minutes)

Divide class into following groups: Two groups of three to construct battery buzzer. Two groups of five to decide on locations for testing sound carry - have students prepare map or describe in writing locations (three or four different locations). Two groups of three to do tape recording and measuring. The rest of the students can act as recorders of activities going on. They could take pictures if you have a camera.

Have battery, buzzer groups assemble their equipment. Have location groups pick and map locations. Have tape recorder groups practice with recorder. Rest of class can observe what these students are doing.

BUZZER/ BELL

Activity

ACTIVITY (30+ minutes)

Discuss results as distances and locations change.

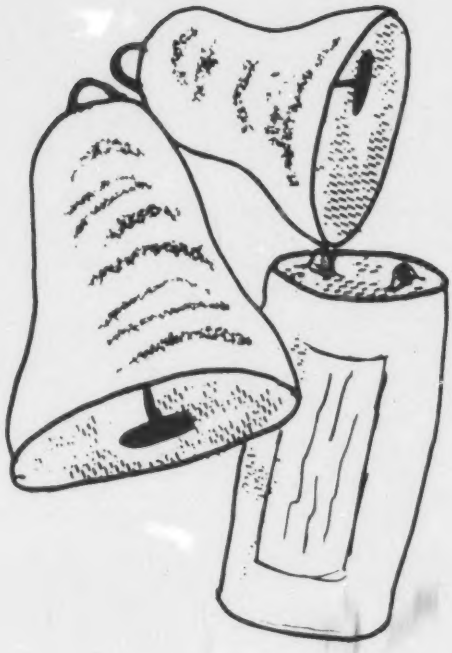
1. What are some things that affect the volume level of the recordings at the different locations?

2. How do you account for the differences between sound volume and location?

POST-ACTIVITY (15 minutes)

Place tape recorder and buzzer or bell in the chosen location. Use meter stick to vary distance between tape recorder and buzzer.

For example, place tape recorder one meter from bell in each location. Repeat at two, three, etc. meter distances in each location.



Materials

LEVEL V OBJECTIVE

1. Students shall recognize various pollution problems, their causes and effects.

2. Students will understand problems of population density and dispersion.

LEVEL VI OBJECTIVE

The student will know that the volume of sound reception is related to the distance from the source and to the physical characteristics of the environmental setting.

MATERIALS

Two buzzers or bells; two or more batteries; wire; two battery operated tape recorders; two meter sticks or yard sticks; camera if possible.

TEACHER BACKGROUND INFORMATION

Wire the buzzer or bell to battery so that continuous sound is emitted before starting the experiment so that you will know how it works.

RUBIK'S CUBE SOLVING

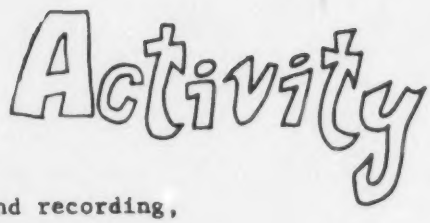
TOPIC: Social Interaction
SUBJECT: Lang. Arts
EST. TIME: 20 minutes
GRADE: 5 or 6

PS

ARTICLE "SUMS"

PRE-ACTIVITY (5 minutes)

1. Divide class.
2. Distribute article to reader.
3. Give following directions to reader:
   A. Read article to group.
   B. Randomly pick on group member to summarize article, as read.
4. Ask recorder to list what happened in group.



ACTIVITY (5 minutes)

Reading, summarizing and recording, according to the above.

POST-ACTIVITY (10 minutes)

Discuss or list on board four problems your group encountered? How could or did your group solve these? Compare with recorders observations. Based on this experience, what can we say or conclude about listening and communication?

LEVEL V OBJECTIVE

The student will be able to understand relationships between members of one species, i.e., cooperation and social interaction.

LEVEL VI OBJECTIVE

The student will be able to identify problems in interpersonal communication such as failure to listen properly, not weighing the pros and cons, too much emotion and speaking out of turn.

Materials

MATERIALS

Short news article, one per group; one recorders sheets per group (see attached).

TEACHER BACKGROUND INFORMATION

Divide class into groups containing six members. Appoint one reader per group and one recorder.

READER WORKSHEET

1. Did your group begin to work together?

2. When did they begin to work together?

3. What factors caused this to happen or not happen?

TOPIC: Social Interaction
SUBJECT: Lang. Arts
EST. TIME: 25 minutes
GRADE: 6

PS

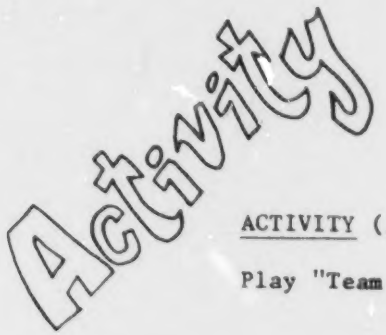
TEAM GOSSIP

PRE-ACTIVITY (5 minutes)

Divide the class into two or more equal teams.

Dsitribute a simple short story to the first person in line.

They may tell what is on the card only to the next person in line and so forth down the line.



ACTIVITY (10 minutes)

Play "Team Gossip."

POST-ACTIVITY (10 minutes)

What happened? Did the story change? What caused these changes? Based on this activity, what can we say about listening?

Re-read the story or stories when teams have finished.

LEVEL V OBJECTIVE

The student will understand the relationships between members of one species.

LEVEL VI OBJECTIVE

The student will know the changes that can occur as particular information is whispered from one person to another.

Materials

MATERIALS

Brief story, as many as there are teams.

TEACHER BACKGROUND INFORMATION

Type brief story on cards for later comparison. (The stories may be alike or different as you wish.)

TOPIC: Social Interaction
SUBJECT: Lang.Arts
EST. TIME: 40 minutes
GRADE: 6

PS

FUN FOREST

PRE-ACTIVITY (10 minutes)

Have students count off by "4's."

Have the One's come up while teacher explains Role A.

Have the Two's come up while teacher explains Role B.

Have the Three's come up while teacher explains Role C.

Have the Four's come up while teacher explains Role D.

Direct students not to tell role.

ACTIVITY (15 minutes)

Group students so that each group has all four roles and the problem to solve.

At the end of five minutes, have students swap roles at random.

POST-ACTIVITY (15 minutes)

Discuss:

Have you ever played any of these roles before?

Which role was the most difficult, etc.?

Was your group able to solve the problem? Why or why not?

LEVEL V OBJECTIVE

The student will understand relationships between members of a species, i.e. role playing.

LEVEL VI OBJECTIVE

The student will recognize that individuals assume different roles in discussion and problem solving situations.

Materials

MATERIALS

See attached Role Cards.

TEACHER BACKGROUND INFORMATION

Explain what to do.

Role A

SMOOTHER MOVER

You are to play the Smoother Mover role in solving the following problem:

The Problem: It is now 2:10 p.m. The bus for the Fun Forest leaves at 2:30. Your group must decide whether or not to go. It is a five minute walk to the nearest bus stop.

Smoother Mover - always soothes over a discussion.
"Everything in due time."
"The sun will shine tomorrow."
"Don't get upset, it will all work out."

Role B

ATTACKER

You are to play the Attacker role in solving the following problem:

The Problem: It is now 2:10 p.m. The bus for the Fun Forest leaves at 2:30. Your group must decide whether or not to go. It is a five minute walk to the nearest bus stop.

Attacker - always attacks ideas presented or will be negative.
"You know they won't go along with that."
"It's too far to the bus stop."

Role C

CAN'T STAY ON THE SUBJECT

You are to play the Irrelevant role in solving the following problem:

The Problem: It is now 2:30 p.m. The bus for the Fun Forest leaves at 2:30. Your group must decide whether or not to go. It is a five minute walk to the nearest bus stop.

Irrelevant - ideas given that do not relate to the topic (evader).
"Did you see the movie last night?"
"When are we going out for P.E.?"
"It's time to go home."

Role D

SENSIBLE (You are to start the discussion.)

You are to play the Sensible role in solving the following problem:

The Problem: It is now 2:10 p.m. The bus for the Fun Forest leaves at 2:30. Your group must decide whether or not to go. It is a five minute walk to the nearest bus stop.

Sensible - always try to be as sensible as possible.
"Let's review where we are."
"Why don't we get back to the purpose of the meeting?"

TOPIC: Social Interaction
SUBJECT: Lang. Arts
EST. TIME: 30 minutes
GRADE: 6

PS

SIX BITS

Activity

PRE-ACTIVITY (10 minutes)

Divide into groups of six (if a group has less than six members, give more than one bit per person). Explain ground rules.

1. Give one bit of information to each group member unless the above situation applies.
2. Tell students there is a problem to solve.
3. You can tell your group what is on your paper, but you can't show it to anyone.
4. Use some method to write down solution to problem.

ACTIVITY (10-15 minutes)

Class begins working on problems and bits of information.

POST-ACTIVITY (5 minutes)

Discuss:

1. How long did it take your group to begin working on the written problem.
2. Did anyone emerge as a leader in your group to help organize?
3. Did everyone trust what each person read off their paper?
4. How long did it take your group to solve the problem?

LEVEL V OBJECTIVE

The student will understand relationships between different species.

LEVEL VI OBJECTIVE

The student will know that there is a process used as a group involves itself in problem solving.

MATERIALS

Six pieces of information including a statement of the problem.

TEACHER BACKGROUND INFORMATION

During the activity, go around to help reinforce the ground rules. The process used in trying to solve the problem is much more important than the actual solution.

CREDITS

Ernie and Char McDonald

INFORMATION BITS

1. Although you may tell your group what is on this slip, you may not pass it around for the others to read.

INFORMATION

The Green "Bomb" raced the Red "Road Runner" the second race of the season.
The driver of the Purple "Phantom" had his engine rebuilt after the season started.
The Yellow "Dragster" had the best first lap time in the first race.

2. Although you may tell your group what is on this slip, you may not pass it around for the others to read.

INFORMATION

Each car raced the other three cars once.
The Purple "Phantom" won the first race even though its engine was a year old.
The Red "Road Runner" had the most experienced driver in the third race of the season.

3. Although you may tell your group what is on this slip, you may not pass it around for the others to read.

INFORMATION

Each driver had named his own car.
The Green "Bomb" lost to the Red "Road Runner" in the second race of the season.
Each driver was experienced and drove well.

4. Your group members have all the information needed to find the answer to the following question. Only one answer is correct. You can prove it. Some of the information your group has is irrelevant and will not help solve the problem.

INFORMATION

In what order did the Purple "Phantom" race the other three dragsters?

5. Although you may tell your group what is on this slip, you may not pass it around for others to read.

INFORMATION

The Purple "Phantom" was second in the third race of the season.
The Green "Bomb" tied the Yellow "Dragster" in the fourth race of the season.
After each driver had raced two races each, the Red "Road Runner" was still undefeated.

6. Although you may tell your group what is on this slip, you may not pass it around for the others to read.

INFORMATION

The Purple "Phantom" raced better as the season went on.

The Yellow "Dragster" upset the Red "Road Runner" in the last race of the season.

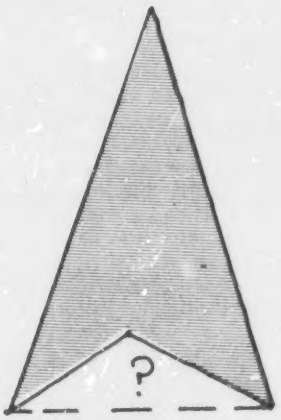
The Purple "Phantom" lapped a car on its way to victory against the car that tied the Yellow "Dragster" in the previous race.

TOPIC: Non-Verbal Social Interaction
SUBJECTS: Language Arts, Social Studies
ESTIMATED TIME: 20 minutes
GRADE: 6
PS

NON VERBAL TRIANGLE

PRE - ACTIVITY (3 minutes)

Place packet of pieces in center of work area or table. Have each student select nine pieces from center, without talking.



ACTIVITY (5 minutes)

Teacher states directions and task. Time will determine winner, but limit activity to five minutes.

Do not answer questions, but repeat directions and task. Do not over-talk.

POST ACTIVITY (10 minutes)

Discuss:

1. How did you feel about the limited directions given?
2. What problems did you encounter in trying to do the task?
3. How did you feel during the give and take of pieces?

LEVEL V OBJECTIVE

The student will understand relationships between members of one species, i.e., cooperation and social interaction.

LEVEL VI OBJECTIVE

The student will recognize that problems can be solved non-verbally.

MATERIALS

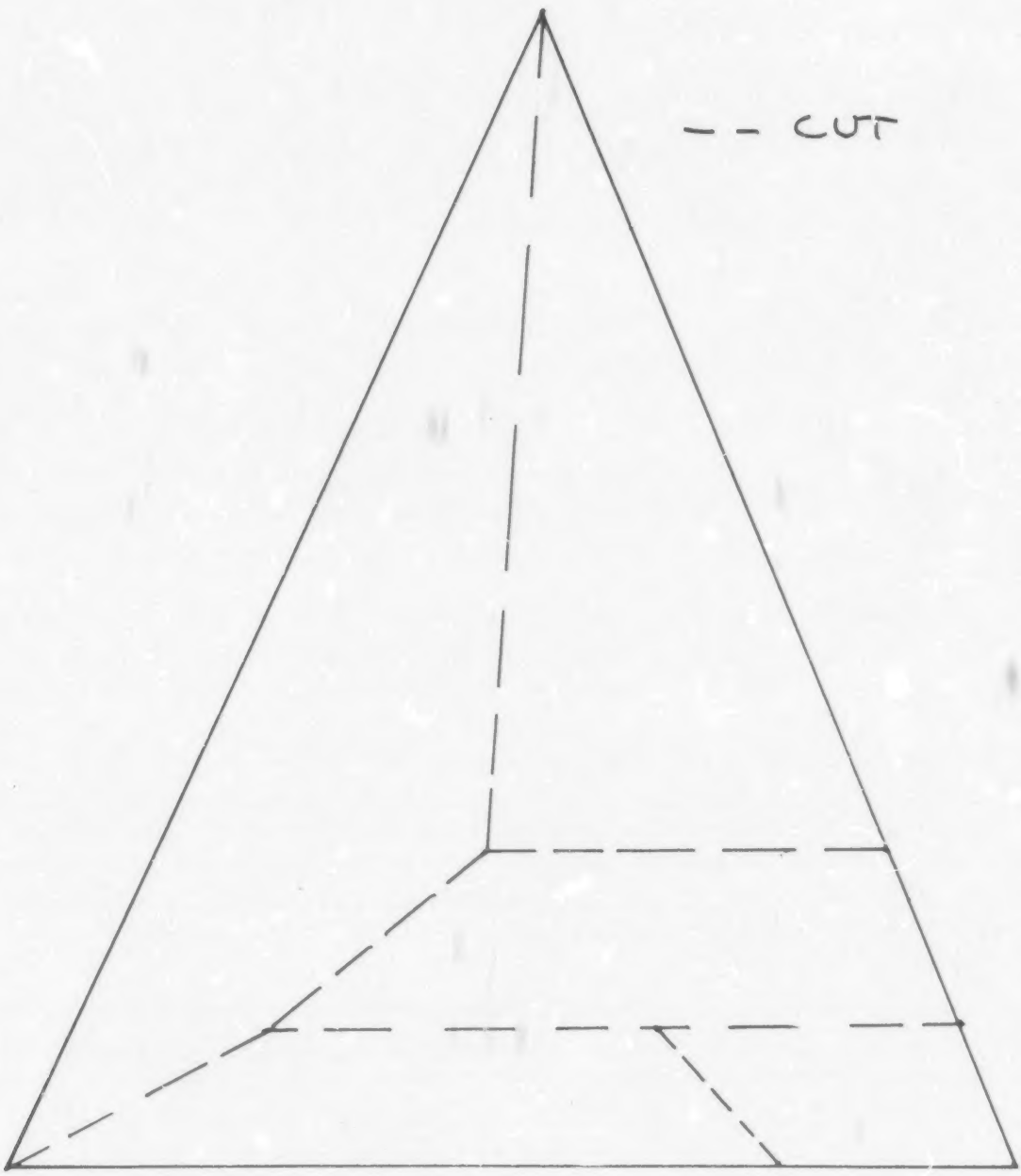
One packet per four students, containing four triangles cut into nine pieces. See attached.

TEACHER BACKGROUND INFORMATION

Directions:

NO TALKING AT ALL!!

Task is to be the first group to put four triangles together.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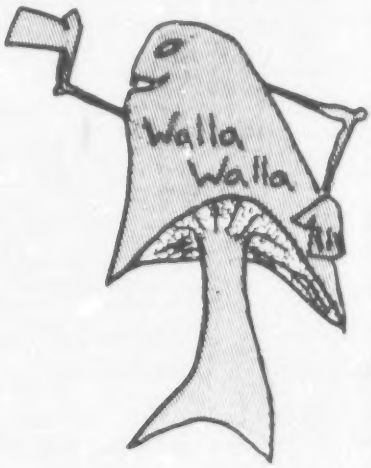
TOPIC: Social Interaction
SUBJECT AREA: Language Arts
ESTIMATED TIME:
25 minutes
GRADE: 6

PS

KO HO WALLA WALLA



PRE - ACTIVITY (5 minutes)

1. Divide class into pairs.
2. Give directions and examples orally.
3. Distribute ditto worksheets.
4. Note: A uses score sheet section when B reads, and B uses score sheet section when A reads.

ACTIVITY (10 minutes)

Have students complete the worksheets, working in pairs. Have students correct by giving one point per correctly identified feeling.

POST ACTIVITY (10 minutes)

Discuss tone of voice. Discuss any similarities between emotions and feelings.

Perhaps group or classify emotions as to similarities.

LEVEL V OBJECTIVE

The student will understand relationships between members of a species, i.e., voice communications.

LEVEL VI OBJECTIVE

The student will recognize that tone of voice affects the interpretation of a statement.

MATERIALS

See attached exercise.

TEACHER BACKGROUND INFORMATION

Make up ditto sheets. Practice saying phrase for demonstration to class. Students are to convey emotions by saying the same phrase in different tones of voice.

SUGGESTED ADDITIONAL ACTIVITIES

Discuss non-verbal communications such as motions that would go with each emotion.

EXERCISE IN LISTENING

In pairs have person "A" say the nonsence phrase expressing the feelings shown in the right-hand column. Person "B" should listen for the feeling being expressed and write (on the score sheet) the word or phrase that describes that feeling.

Person A Says	What the Person is Feeling
1. Ko Ho Walla Walla, Razz-ma-tazz	1. Worried
2. " "	2. Excited
3. " "	3. Bitter
4. " "	4. Amazed
5. " "	5. Angry
6. " "	6. Back-off - I've got the picture
7. " "	7. Thankful
8. " "	8. Confident
9. " "	9. Wnating forgiveness
10. " "	10. Discouraged

SCORE SHEET

The other person in your group will read several statements. Write down the feelings expressed in each statement.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

TOPIC: Problem Solving
SUBJECTS: Soc. Studies
EST. TIME: 60 minutes
GRADE: 6

PS

LAND USE

PRE-ACTIVITY (15 - 20 minutes)

Do map tasks one and two.

Re-divide groups into interest groups and a decision-making board.

See attached Task #3. Statement of Problem: The Perfect Peat Company is asking for re-zoning of the west side of Chase Lake.

Activity

ACTIVITY (15 - 20 minutes)

Presentation

Students role-play in assigned interest groups in Task #3.

POST-ACTIVITY (30 minutes)

Discuss factors used by board to make decisions. Discuss how interest group played an actual role in the decision making.

Discuss how given data is used to develop a view point or persuasion argument. Assign Task #5, attached.

SUGGESTED ADDITIONAL ACTIVITIES

Have students attend an actual planning board meeting and report back to the class. Take a field trip to Chase Lake.

LEVEL V OBJECTIVE

The student will understand physical, economic and human factors involved in land use decisions.

LEVEL VI OBJECTIVE

The student will recognize industrial and recreational land use possibilities.

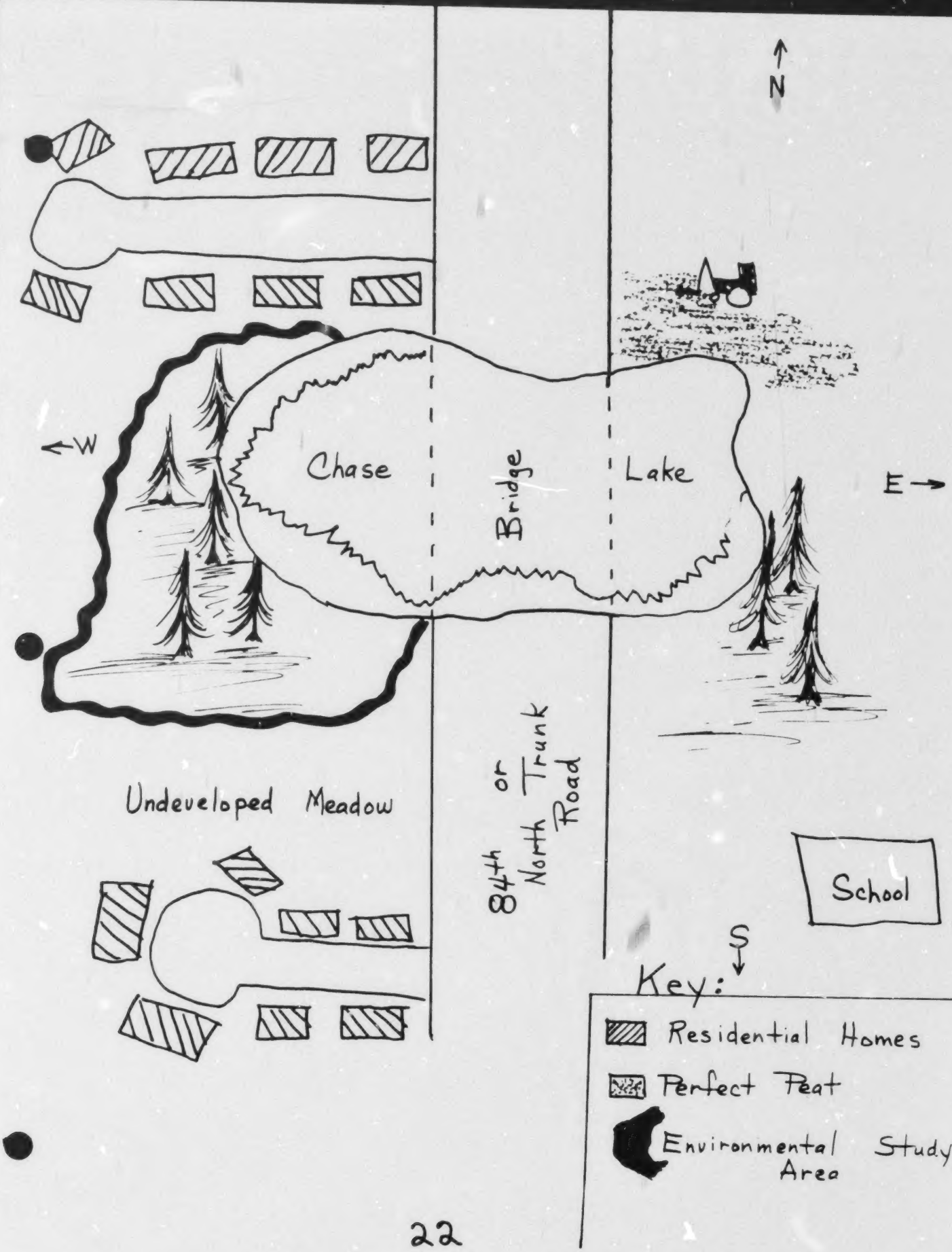
Materials

MATERIALS

Map of Chase Lake Bog area, see attached. Please note: These are highly fictionalized activities, but are based on actual situations. Pictures may be taken at the actual site by the teacher for use in this activity.

REFERENCE

"Chase Lake Bog," Edmonds School District Publication, written by Marian Kohn.


N
W
E
S
Chase
Bridge
Lake
Undeveloped Meadow
84th or North Trunk Road
School
Key:
Residential Homes
Perfect Peat
Environmental Study Area

TASK #1 (10 minutes)

Using map, list as many activities as you can that could take place in the area drawn on the map. Work in groups of four.

TASK #2 (5 minutes)

Using your list of activities, decide and list additional activities which would conflict with each other.

TASK #3 (10 minutes)

Task: Your group is to use the prepared data to present your interest group's viewpoint to a mock planning board. You may add additional original data if you wish.

Get a data sheet for each member of your group from the teacher. You have 15 minutes to plan, starting now.

RESIDENTS

1. You have purchased a home bordering the lake.
2. You like the quiet side of the lake.
3. Your family has become attached to the ducks, etc., that make their home in the lake and the surrounding bog and forest area.
4. You do not like the noise and dust from trucks and diggers on the other side of the lake.

PEAT BOG DEALER

1. You are running out of your source of natural peat moss on the east side of the lake.
2. Your operation employs 10 men.
3. Peat moss is used to beautify gardens.
4. Your company can accept a contract to double the workload if allowed to move to the west side of the lake.

ENVIRONMENTAL GROUP

The Chase Lake Bog has provided a unique study area for environmental investigations by schools and other groups.

PRETEND (SIMULATE)

Interview some students and/or teachers who have used the site. Include their remarks as part of your presentation.

PLANNING BOARD

Meet and decide on five points to evaluate presentation. Appoint a chairman to conduct presentations and appoint a timer. Jot down questions you might ask the groups.

TASK #4

Give presentation as directed by board.

TASK #5

Task to be done in small groups on butcher paper or cardboard. Classify each fact listed under each role or interest group under the following headings, and tell why.

PHYSICAL ECONOMIC HUMAN FACTOR REASON

After each group has classified facts, discuss or have the students individually answer the following questions:

1. Does the information fall into more than one category or heading? Why?
2. Did your group find that the facts were always interpreted the same way? By all the people?
3. Who puts values or interpretations on facts?
4. Does this give you any reason to think about your values?

TOPIC: Problem Solving
SUBJECTS: Soc. Studies
EST. TIME: 40 minutes
GRADE: 6

DECISIONS

PRE-ACTIVITY

After the Post-Activity in the Land Use Decisions lesson, suppose that the decision made by the planning board is one that the group or the community does not like.

Discuss and review how the decisions were made.

ACTIVITY

Discuss and list ways to change a decision.

List data or information needed in order to use city or political system: Voting, term of office, candidate background, etc.

Collect actual information from local city.

POST-ACTIVITY

Conduct a campaign for new board members, complete with speeches posters, etc. Then hold an election.

Distribute a petition for a re-hearing on the Chase Lake question.

Repeat the simulation steps from the Land Use Decisions lesson.

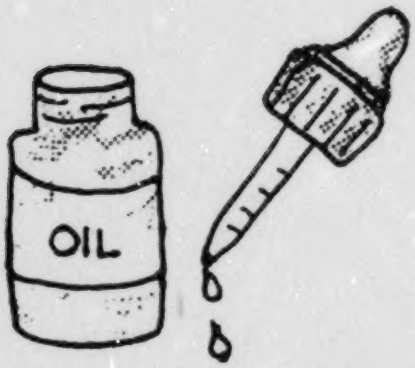
TOPIC: Oil Pollution
SUBJECTS: Social Studies, Science, Language Arts
EST. TIME: 65 min.
GRADE: 6

PRE - ACTIVITY (20 minutes)

Fill peanut butter jars with water.

Try to have samples of marine, pond, and tap water if possible.

Have students predict what they think will happen when the oil is added.



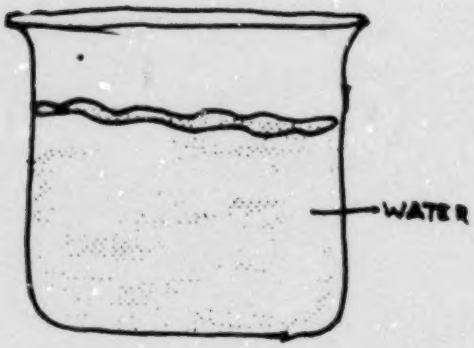
OIL SPILL

Activity

ACTIVITY (30 minutes)

Add, counting the drops, various household oils and record what happens.

Have students explore ways of removing oil (sponges, paper towels, spoons, etc.) Distribute question sheet, attached.



POST ACTIVITY (15 minutes)

If you can collect bird feathers readily, i. e., go for a walk collecting discarded bird feathers, or use an old feather pillow, dip various feathers into oil solution and observe what happens. Discuss implications to bird population.

LEVEL V OBJECTIVE

The student will recognize various pollution problems, their causes and effects.

The student will differentiate between renewable, non-renewable, and reclaimable resources.

LEVEL VI OBJECTIVE

The student will know that oil spillage in water has an adverse effect on the natural environment.

Materials

MATERIALS

Peanut butter jars (wide mouth).

Oils (olive oil, cooking oil, three-in-one oil, car oil, etc.)

Pipet, straws, or eye droppers.

Question sheets, one per person.

TEACHER BACKGROUND INFORMATION

You may want students to bring an old set of clothes for working with oils. Cover your floor if you have carpeting.

SUGGESTED ADDITIONAL ACTIVITY

Try adding water to jars containing oil.

ACTIVITY QUESTION SHEET

1. What did you observe when you added oil to water?

2. How did the type of water sample affect what happened when you added oil?

3. What general statements can we make concerning how water and oil react when added together?

4. What problems did you encounter in oil removal?

5. Which oil removal methods worked the best?

6. What does this tell us about oil spills in the sound or the ocean?

PROBLEM SOLVING

STREAM STUDY

Topic: Stream Study #1
Subject Area: Language Arts
Estimated Time:
35 minutes
Grade: 5 or 6
FS

PRE - ACTIVITY (5 minutes)

Inform the students what they will be doing for the next few days. Set your boundaries and rules you feel are necessary before going out.

STREAM STUDY

Activity

ACTIVITY (10 - 15 minutes)

See Task #1

POST ACTIVITY (15 minutes)

1. What did you notice about the plants of this environment?
2. What did you notice about the animals? Any signs of animals that aren't here? What kinds of animals?
3. What did you notice about the physical characteristics? (The rocks, the stream bank, the course of the water.) Any gravel, rock, or sand bars?
4. Has anyone seen this stream when it ran a different course?
5. Could this stream run a different course? How or why?

LEVEL V OBJECTIVE

The student will be able to identify plants and animals of his local environment.

LEVEL VI OBJECTIVE

The student will know that the stream has a diversified environment such as variations in plants, animals, air, rock and water.

TEACHER BACKGROUND INFORMATION

This study is going to take a few days. Before beginning this study, the students need to be prepared for working outdoors. If needed, refer to the guidelines for Teaching Children Outdoors. Many of the things here have also been adopted for the puddle study. We begin this lesson by taking an overall view of our stream and noting the obvious living and nonliving characteristics. Then we go to the stream's edge to collect and closely scrutinize the aquatic life, and in turn make a general attempt to identify the specimens found. Then we'll review the necessary non-living factors animals need in order to live in our stream environment and check some data cards, and finally predict some outcomes of the nonliving factors. Then comes the "testing out" of these predictions, and we'll see a correlation between the non-living and living factors of our stream. We will then assume our stream must supply water for our community and proceed to ascertain how many people the stream could support. Then we can discuss some of our feelings and values about water. We will do this study once in the fall and once in the spring. Thus we will be able to figure when our stream flows most and we can entertain the idea of a reservoir, or should we save water for the summer time? And is there a time when the stream is bountiful with life?

The first couple of times out may possibly amount to little because the students will not be all that familiar with the proceedings, so don't plan too much for your allotted time. The estimated times include only time necessary for activities on plans and don't include time for going to and coming from the stream. If you don't complete a lesson, they are easily continued the next day.

MATERIALS

Task Card #2; pencils
clipboard

Materials

RESOURCES

Investigating Your Environment Series, U.S. Forest Service, Portland, OR.

TASK #1 (10 - 15 minutes) Work by yourself or in small groups.

As you approach the stream, observe and record your observations about the stream environment: (Can be done visually or verbally.)

Plants: _____

Animals: _____

Air: _____

Rocks: _____

Water: _____

Topic: Stream Study #2
Subject Areas: Science - Language Arts
Estimated Time: 60 minutes
Grade: 5 or 6

PRE - ACTIVITY (10 minutes)

Discuss:

1. If you had any kind of animal at home, what are some things you would do to take care of it?
2. What do animals that live in water need to live?
3. Where would you look to find animals in the water?
4. How should we treat animals that we find in the water when we are collecting them and observing them?

ACTIVITY (35 minutes)

See Task #2 (Go from group to group and see how they are doing.) See Task #3

POST ACTIVITY (15 minutes)

Clean up equipment.

LEVEL V OBJECTIVES

1. The student will be able to identify plants and animals of his local environment.

2. The student will be able to inventory a given environment.

LEVEL VI OBJECTIVES

The student will be able to identify aquatic life using a reference book such as the Nature Guide Pond Life Book.

Materials

MATERIALS:

As much of the following equipment as possible:

Jelly cups or baby food jars for collecting aquatic animals.

Four white dishpans to put all specimens in for small group observation.

Ten plankton nets made from baby food jars and old nylons.

Golden Nature Guide Pond Life Books.

Task Cards #2 and #3.

One hand lens per two students.

TEACHER BACKGROUND INFORMATION

Have groups, 4 or 5 per group, designated before going out into environment. Each group could also decide who is going to do what so all will have a job. Some jobs or activities will be done by all. Students need to be shown how to use this simple equipment.

RESOURCES

Investigating Your Environment Series
U. S. Forest Service
Portland, Oregon

TASK #2

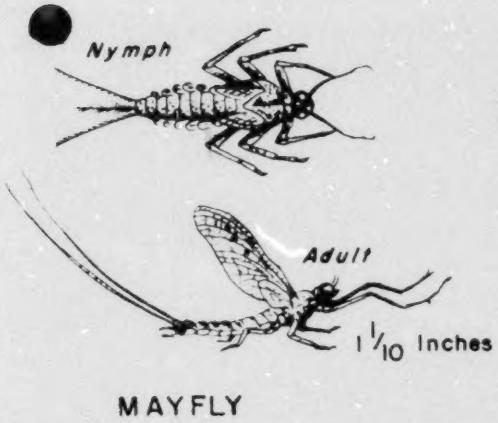
Go out with your group to the stream and collect as many different kinds of aquatic life as you can. Use the equipment your group is taking. Put all the aquatic life in the white dishpan for your group to observe. When you feel you have all you can find, contact your instructor to get the next task.

TASK #3 Using the attached picture keys, and your Golden Nature Guide Pond Life Book, if you desire, generally identify the specimens you found. List or sketch the animals you found below.

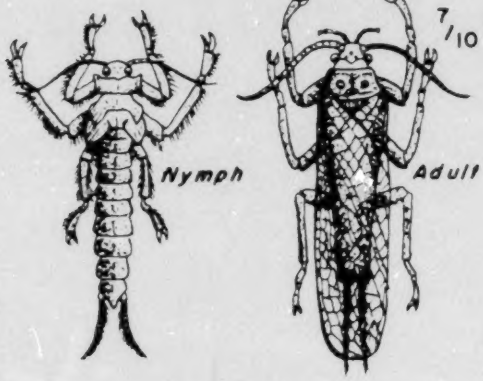
Description of where found	Type (name or sketch)	Number

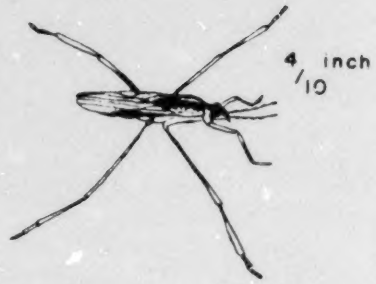
Return animals to water as soon as you are finished.

AQUATIC INSECTS

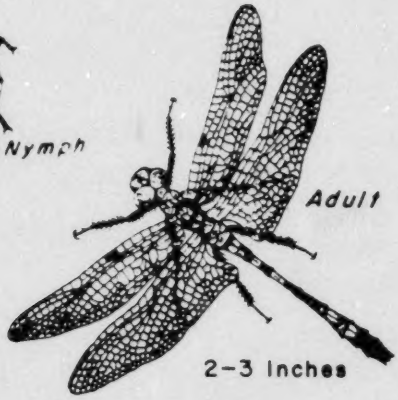


MAYFLY





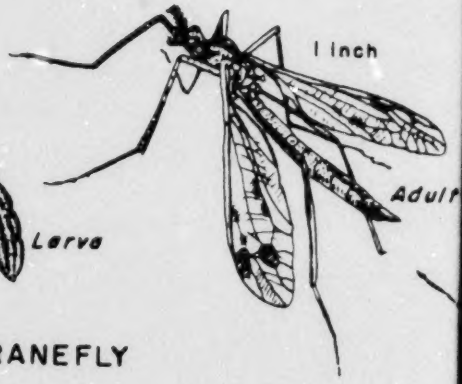
WATER STRIDER



DRAGONFLY

STONEFLY

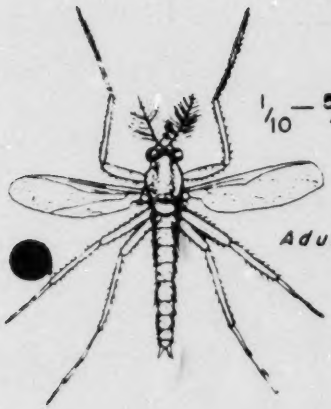
.WHIRLIGIG BEETLE



CRANEFLY

BLACK FLY

MOSQUITO



MIDGE

CADDISFLY

Topic: Stream Study #3
Subject Area: Science
Estimated Time:
50 minutes
Grade 5 or 6
PS

PRE - ACTIVITY (20 minutes)

Using data collected at stream's edge day before, discuss:

1. What animals did you find? Compile a list on board. Each Student should record the group list on his lab sheet.
2. Where were most of the specimens located?
3. What similarities and differences are there?
4. How could we classify the animals we found?
5. What other life might be found in this stream?
6. Would we be likely to find the same specimens in a different aquatic environment? Why or why not?

STREAM STUDY

Activity

ACTIVITY (10 minutes)

Review the things we said animals needed in order to live in the water. (pH, O_2, temp., etc.)
Assign Task #4

POST-ACTIVITY (10 - 15 minutes)

Discuss as a whole group:

1. Plot or post many predictions on board.
2. Discuss the range of predictions.
3. What criteria did you use to arrive at your predictions?
4. How can we test our predictions?

LEVEL V OBJECTIVES

The student will know the classification systems of the various forms of plant and animal life.

LEVEL VI OBJECTIVE

The student will be able to predict, based on pH, oxygen content, and temperature of water, the types of aquatic life to be found in a given stream.

Materials

MATERIALS

Blackboard or large chart paper.

Task Card #2, and #3 data collection sheet.

Analyzing data sheets, at least one per two students.

Task #4.

RESOURCES

Investigating Your Environment Series
U. S. Forest Service
Portland, Oregon

ANALYZING DATA

pH RANGES THAT SUPPORT AQUATIC LIFE:

	MOST ACID 1	2	3	4	5	6	NEUTRAL 7	8	9	10	11	MOST ALKALINE 12	13	14
Bacteria:	1.0{													}13.0
Plants (algae, rooted plants, etc.)						6.5{								}12.0
Carp, suckers, catfish, some insects						6.0{							}9.0	
Bass, crappie						6.5{							}8.5	
Snails, clams, mussels							7.0{						}9.0	
Largest variety of animals (trout, mayfly, stonefly, caddisfly)						6.5{							}7.5	

DISSOLVED OXYGEN REQUIREMENTS FOR NATIVE FISH AND OTHER AQUATIC LIFE:

DISSOLVED O_2 (parts per million)

Cold-Water Organisms (below 68°F) such as salmon and trout:
- Spawning.....7 ppm and above
- Growth and well-being.....6 ppm and above

Warm-Water Organisms (above 68°F) such as bass and crappie:
- Growth and well-being.....5 ppm and above

APPROXIMATE TEMPERATURE RANGES REQUIRED FOR GROWTH OF CERTAIN ORGANISMS:

TEMPERATURE		ORGANISMS
Greater than 68°F (warm water)		Much plant life, many fish diseases. Most bass, crappie, bluegill, carp, catfish, caddis fly.
Less than 68°F (cold water)	Upper range (55°F - 68°F)	Some plant life, some fish diseases. Salmon, trout. Stonefly, mayfly, caddis fly, water beetles, striders.
	Lower range (less than 55°F)	Trout, caddis fly, stonefly, mayfly.

TASK #4

Based on the aquatic animals you found, and the Analyzing Data Section passed out, predict the following characteristics of this stream:

I predict:

the water temperature will be_____because_____;

the air temperature will be_____because_____;

the pH number will be_____because_____;

the dissolved O_2 count will be_____because_____.

Keep these predictions for your own reference.

Topic: Stream Study #4
Subject areas: Science, Language Arts
Estimated Time: 45 minutes
Grade 5 or 6
PS

PRE - ACTIVITY (10 minutes)

Get into groups of 5 or 6.

Explain procedures for field testing, rules and boundaries.

Each group should go to a different part of the stream.

STREAM STUDY

Activity

ACTIVITY (20 minutes)

Do Task #5.

POST-ACTIVITY (10 - 15 minutes)

Come in and clean up equipment.

Have those groups cleaned up first, record the results of their tests on a chart that can be saved for the next day. Put chart on a large sheet of butcher paper.

LEVEL V OBJECTIVE

The student will be able to identify physical characteristics and composition of water such as temperature, mineral content, oxygen content, pH.

LEVEL VI OBJECTIVE

The student will know the non-living factors of a stream, such as water temperature, air temperature, oxygen content and pH.

MATERIALS

4 water test kits if possible (your school may have some, or borrow from a neighboring school or from the Administration Center).

15 air thermometers.

Task Cards #4 and #5.

TEACHER BACKGROUND INFORMATION

There are lots of jobs to be done in water testing (clipping, squirting, swirling, dipping, counting, etc.) so be sure everyone has a job. You may need to show students use of kit or names of different parts of kit before going out to field test. They can read directions and ask questions before going out.

RESOURCES AND CREDIT

Investigating Your Environment Series
U. S. Forest Service
Portland, Oregon

TASK #5

MAKE SURE EVERYONE IN YOUR GROUP GETS INVOLVED IN THE TESTING. Using the water test kit, determine the water temperature, air temperature, dissolved oxygen count, and pH of the stream.

Record the data below: (also record predictions from Task #4 to compare)

Location of water sample (edge or middle of stream)	Time Taken	Water Temperature		Air Temperature		pH		Usable O_2 (ppm)	
		My Pred.	Act. Test	My Pred.	Act. Test	My Pred.	Act. Test	My Pred.	Act. Test

Topic: Stream Study #5
Subject areas: Science, Language Arts
Estimated Time: 25 minutes
Grade 5 or 6

PS

PRE - ACTIVITY (5 minutes)

Be sure all groups have charted their recordings from the day before. Let students look over charts.

STREAM STUDY

Activity

ACTIVITY (20 minutes)

Begin questioning results:

1. What do you notice about the results charted?
2. Why might there be differences in results among groups?
3. How did your group's results compare with your predictions?
4. Is it necessary to have sophisticated equipment to determine temp., oxygen, pH, etc.?
5. Write a paragraph on what we can say about the quality of water in this stream, and other things we need to know to decide whether or not to drink this water.

LEVEL V OBJECTIVE

The student will identify physical characteristics and composition of water such as temperature, mineral content, oxygen content, pH.

LEVEL VI OBJECTIVE

The student will know how to use a water test kit for testing pH, oxygen content, and water temperature.

Materials

MATERIALS

Task Card #5.

Chart on which data were recorded day before.

RESOURCES AND CREDIT

Investigating Your Environment Series
U. S. Forest Service
Portland, Oregon

Topic: Stream Study #6
Subject Areas: Science, Math
Estimated Time: 40 minutes
Grade 5 or 6

PRE - ACTIVITY (5 minutes)

Ask following questions:

1. If we want to know how much water is in this stream, what measurements do we need to know?

2. What are some ways we use water daily?

3. Predict how many people you think could live off the water in this stream.

ACTIVITY (20 minutes)

Divide class into 4 - 6 groups, depending on amount of equipment you were able to get. Pass out Task Card #6 and have students look it over. Give each group a chance to assign jobs for tomorrow's activities. If anyone is bringing equipment from home, have him (her) write himself (herself) a note. You may need to collect task cards so they won't misplace them overnight. Jobs within the group could be::

- Measurer of 100'
- Stick dropper
- Width measurer
- Depth measurer
- Timer, etc.

Spread students out so they measure different 100' marks, if possible, and you could then average all your results in the end.

POST-ACTIVITY (15 minutes)

Go over one or two math problems on finding averages.

Go over a couple of problems on converting inches to feet.

Go over a couple of multiplication problems where one multiple is a decimal, for example:

$$\begin{array}{r} 7.43 \\ \times 73 \\ \hline \end{array}$$

This review will spark some of your math "aces" and make your final calculations easier.

LEVEL V OBJECTIVE

The student will understand how the structural and behavioral changes of plants and animals takes place.

LEVEL VI OBJECTIVE

The student will know the importance of pre-planning in carrying out an Environmental Education activity such as determining stream-flow.

Materials

MATERIALS

Task Card #6.

Yardstick or tape measure for each group.

Ping pong balls or small sticks that float, one for each group, plus spares.

3 or 4 watches with second hands, or stop watches.

Students will need boots and/or extra clothes and shoes.

TEACHER BACKGROUND - DETAILS

Today will be used for you to explain what will happen tomorrow, and for the students to get into groups and assign jobs and equipment needed. The Math for this, after you take the measurements, gets hard as you progress. You may want to get all the data and send it to the 6th grade to compute, or you can just help the students through it. The POST ACTIVITY gives some preliminary practice.

RESOURCES

Investigating Your Environment Series
U. S. Forest Service
Portland, Oregon

TASK #6 - DETERMINATION OF STREAMFLOW

Instructions for collecting and recording streamflow measurements.

a. Measure and mark a 100' distance along a straight section of your stream. If you can't find a straight 100' section, use 50' or 25'. Throw a stick 2 or 3 inches long into the water above the upstream marker. Record the number of seconds it takes to float downstream between the 2 markers. Now divide the distance by the number of seconds it took the stick to float between the markers:

_____'÷_____=_____ft./sec.
(distance) (# of seconds to float 100') (# ft. stick floated each second)

b. Find the average width of your section of the stream. Measure the width of the stream at 3 places within the 100' area. Divide the total by 3 to get the average width of the stream.

1st measurement:_____'
2nd measurement:_____'
3rd measurement:_____'

Total:_____'÷3=_____'(average width)

c. Find the average depth of your section of the stream. Measure the depth of the stream in at least 3 places in a straight line across the stream. Divide the total by 3 to get the average depth of the stream.

1st measurement:_____'
2nd measurement:_____'
3rd measurement:_____'

Total:_____'÷3=_____'(average depth)

d. Find the cubic feet of water per second. Multiply the average width by the average depth by the number of feet the stick floated each second. Remember that all 3 measurements must be in feet, or all 3 must be in inches. Don't multiply feet by inches.

Note: a cubic foot of water is the amount of water in a container 1' wide, 1' high, and 1' long, or 7.48 gallons.

_____x_____x_____=_____
(average width) (average depth) (# of feet per second) (cubic feet of water flowing per second)

In order to find how many people could live from the water in this stream, complete the following calculations:

_____x 7.48 =_____
(stream flow in cubic' per sec.) (gallons in 1 cubic' of water) (gallons of water per second)

_____x 60 =_____
(gallons per second) (seconds in a minute) (gallons of water per second)

_____x 1440 =_____
(gallons per minute) (minutes in a day) (gallons of water per day)

The average person uses about 200 gallons of water a day for home use. This does not include each person's share of the water used for industrial, public services, and commercial purposes.

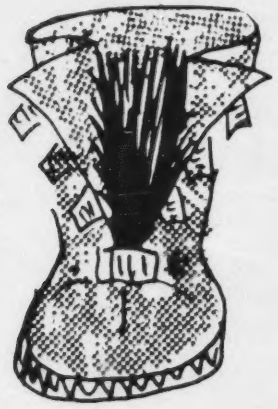
_____÷_____=_____
(gallons per day) (amount of water one person uses per day) (total # of people who could live from water in this stream)

Topic: Stream Study #7
Subject Areas: Math, Scienc
Estimated Time:
50 minutes
Grade: 5 or 6

PS

PRE - ACTIVITY (10 minutes)

Review Task #6. Review procedure for gathering information. Be sure all groups have assigned all jobs. Check clothing.



STREAM STUDY

Activity

ACTIVITY (20 - 3- minutes)

Go out to site and collect data on Task #6.

POST-ACTIVITY (10 minutes)

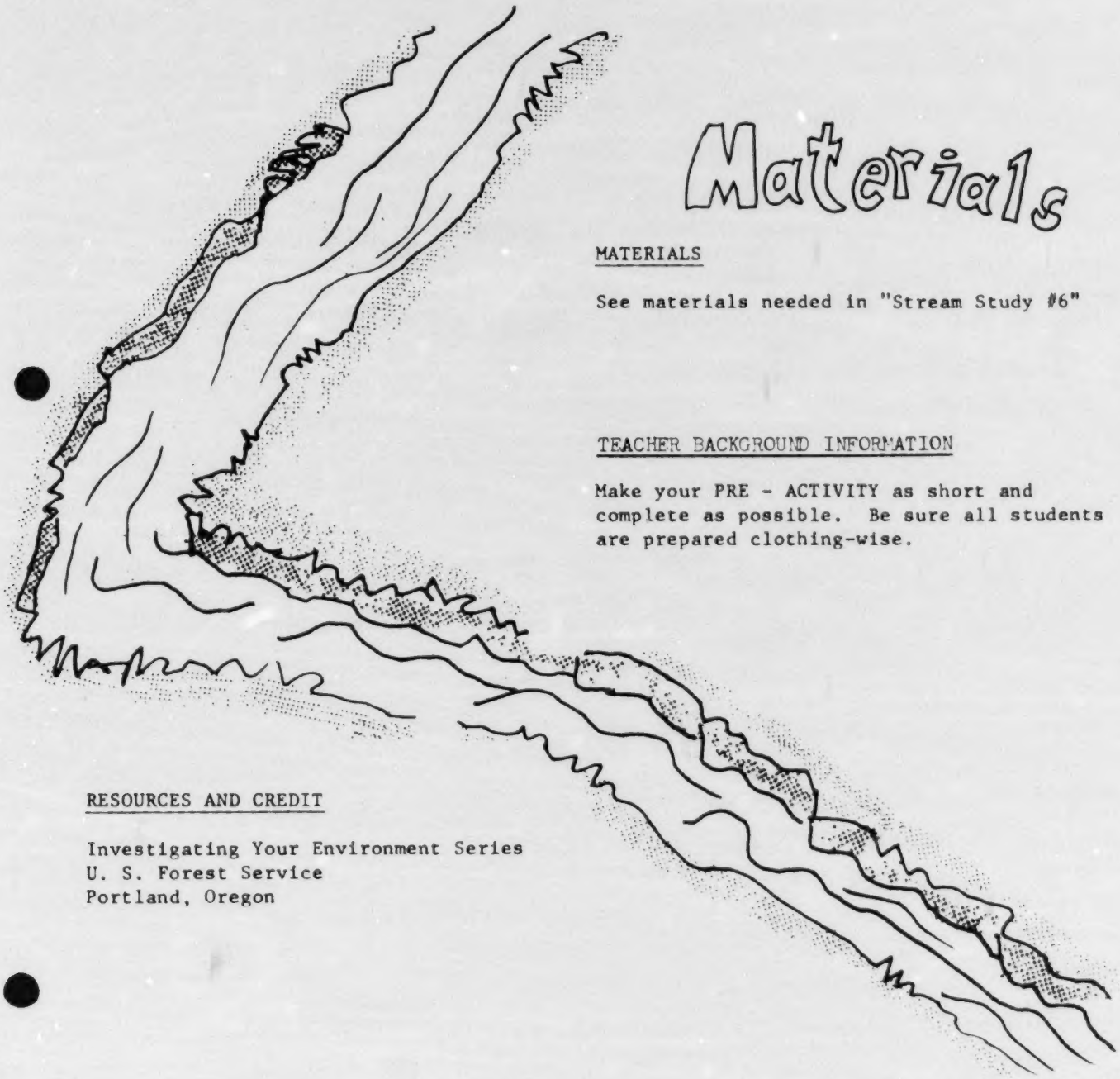
Come in, clean up, and change clothes if necessary.

LEVEL V OBJECTIVE

The student will understand some of the physical factors involved in land use decisions.

LEVEL VI OBJECTIVE

The student will know how to use a yardstick, stopwatch, and ping pong balls to measure water volume flow rates.



Materials

MATERIALS

See materials needed in "Stream Study #6"

TEACHER BACKGROUND INFORMATION

Make your PRE - ACTIVITY as short and complete as possible. Be sure all students are prepared clothing-wise.

RESOURCES AND CREDIT

Investigating Your Environment Series
U. S. Forest Service
Portland, Oregon

Topic: Stream Study #8
Subject Area: Math
Estimated Time:
40 minutes
Grade: 5 or 6

PS

STREAM STUDY

ACTIVITY (20 minutes)

Average the width and depth; find number of feet per second stick floats, etc., until you come up with total.

POST-ACTIVITY (20 minutes)

1. Check the total number of people against students' previous guesses. If you got more than one group's total, then average all groups.

2. How many people could live off the water in this stream?

3. What would happen to this environment if we piped all the water out of the stream at this point, and into the community?

4. If we are going to use this water, how much water should be left to flow down stream? Why?

5. Does this stream always have this amount of water in it? Why?

Do Task #7. Then ask the following questions:

1. What did you find out about water from our investigations today?

2. Why is water important to the ecosystem?

3. How can we summarize our discussions and investigations?

4. What methods and processes did we use in our investigations today?

LEVEL VI OBJECTIVE

The student will know that it is important to conserve water.

TASK #7 - Work by yourself.

1. Describe in writing how you feel about man's effect on the aquatic environment at this site:

_____

_____

_____

_____

2. Describe at least one action you can take in your everyday life to help improve the way water is managed:

a) in your home: _____

b) in your community: _____

c) in your consumer habits: _____

3. Describe the benefits of each action in #2:

_____

_____

Topic: Stream Study #9a
Subject Areas: Art, Math
Estimated Time:
50 minutes
Grade: 5 or

STREAM STUDY

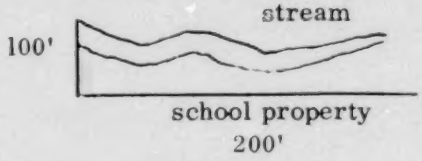
PRE - ACTIVITY (10 minutes)

Tell students: The principal wants some plans for developing the stream area. We'll break up into groups, and each group will plan a strategy for use of the school property bordering the stream. (Example: nature trail, picnic area, amphitheatre, etc.) Use all the data already collected and discussions already completed. Break into 5 or 6 groups.

Activity

ACTIVITY (20 minutes)

Each group goes out and maps stream area bordering school. Example:



POST ACTIVITY (20 minutes or more, depending on detail)

Come in and blow map up, or make a large model showing where all proposals will be placed in area. (Trails, benches, etc.) Same day or next day, group should plan what they are going to say to principal along with their visual display. The presenting of these proposals can be made as each group completes its own plans. Have them present plans to principal.

SUGGESTED ADDITIONAL ACTIVITIES

Present plans to other teachers, perhaps even a 6th grade and a 4th grade representative. Then implement the plan if possible.

MATERIALS

Clip boards
Pencils
Drawing paper
Large butcher paper
Felt pens
Materials for making models
(flour, water, etc.)

TEACHER'S BACKGROUND - DETAILS

You can use "Stream Study #9a" or "#9b" or both. You can use both after first study or second study, or one after each study. #9a will take a few days, by the time all presentations are made.

LEVEL V OBJECTIVE

1. The student will be able to identify environmental problems, especially in his own local environment.

2. The student will be able to demonstrate constructive and cooperative action in the maintenance or improvement of the local environment.

LEVEL VI OBJECTIVE

The student will know that without a plan or guideline, land can be wasted.

RESOURCES

Investigating Your Environment Series
U. S. Forest Service
Portland, Oregon

Topic: Stream Study #9b
Subject Areas: Creative Dramatics
Estimated Time: 55 minutes
Grades: 5 or 6

STREAM STUDY

Activity

PRE - ACTIVITY (20 minutes)

Divide class into 6 groups. Assign each group a role. Allot about 15 minutes for each group to make a presentation. Tell them they will give a 3 minute presentation. Try to include more than one speaker.

ACTIVITY (20 minutes)

3-minute presentations by various groups.

POST-ACTIVITY (10 - 15 minutes)

Board's presentation regarding their decision after they have had 5 minutes to decide. They must back up their decisions with reasons.

LEVEL V OBJECTIVE

The student will consider a specific environmental problem from many different viewpoints.

LEVEL VI OBJECTIVE

The student will know that there are diverse points of view held by different interest groups in land use planning.

MATERIALS

Fact sheet concerning statements of interest groups.

TEACHER BACKGROUND - DETAILS

This simulation game can be used at the end of the first stream study, or, hopefully, it will be used after the second stream study in the spring so there will be more data to use.

RESOURCES

Investigating Your Environment Series
U. S. Forest Service
Portland, Oregon

"FACT" SHEET ON VARIOUS INTEREST GROUPS

Blue Water District:

Would like to construct a reservoir, and in doing so might need to re-channel the stream.

Rocky-Reach Park Department:

Re-channelling the stream would stir up silt that would affect the fish life for a couple of years. How would they take care of the erosion problem that would occur?

Wailing Water Elementary School:

They would lose a study site, there would be no more after school model sailing club, and the picnic area and amphitheatre would lose their scenic value.

Blue Ridge Homeowner:

The stream going through some back yards would be dried up by the rechannel, and that is why they bought in the area. Their property value would go down. Also, they don't want the reservoir tank spoiling their view, or the noisy construction going on.

Flim-Flam Construction Company:

They own all the property which the re-channel would go through. They wouldn't have to lay off 20 employees because they could build higher-class homes on their property, since people will buy more expensive homes if there is a stream on the property.

Blue-Rock City Planning Board:

Overall decision-makers base their decisions on the arguments of the other groups. This group decides on 5 things they will rate the speakers on for the purpose of making their decision. (Examples: Economics, Environmental impact, Community service, etc.)

TEACHING CHILDREN OUTDOORS

Guidelines for Conducting a Field Trip

I. PRE-TRIP

A. LOGISTICS

PREPARING TO USE AN ENVIRONMENTAL STUDY AREA

Visit the site yourself first in order to have the best control of the situation and anticipate some of the difficulties or logistics questions that could arise. Examine the area carefully and know your trails. This one step can make the difference between a successful and a chaotic trip.

Is there room for your thirty active children? Are there problems of access? Will the children be able to see? You should obtain permission in advance if you plan to bring your class into a private area.

Organization and planning is essential. How far is it? How long will it take? What is needed (water, lunch, other equipment)?

RULES AND RESPONSIBILITIES

Before the trip, have the children join you in deciding on a set of rules and conduct based on the suggestions listed under the Activity Section. Try to keep the rules "do" rather than "do not." They should include most of the following:

1. Always keep the teacher within sight and sound.
2. Stay behind the leader and at a sufficiently safe distance from one another and dangerous areas. (Proper distance can be measured safely and conveniently by the students in terms of "body length.")
3. Always watch and listen for the teacher's signal to pay attention and gather together.
4. Try to leave the place in as good, or better condition, than you found it. Replace everything you move. Avoid stepping on plants and animals whenever possible.

PREPARE FOR EMERGENCIES

1. What are the health and safety hazards? Include a First Aid Kit and water, if necessary.
2. Remind students to dress properly for the weather and type of activity planned (e.g. hats, raincoats, wading boots, etc.)
3. Children should be warned that they are to avoid picking up any plant or animal about which they are in doubt (see guidelines for collecting specimens). Students should not taste or eat anything without first checking with the leader.
4. If you teach in an area where there are poisonous plants, snakes or insects, be sure that you and the children recognize the poisonous

4. (continued)
species. Then they should also know poison ivy, poison oak and poison sumac and avoid them.

USE OF ASSISTANTS OR PARAPROFESSIONAL AIDES

1. High School Teachers' Aides: If you have a high school teacher aide, why not divide your class in half and plan together to let him/her help in certain phases of teaching outdoors (within sight and sound of your supervision).

   More information about the availability and assignment of high school student teachers' aides for classwork and or field trips may be obtained from the high school Counseling Office in each high school.

2. Intermediate and Junior High School Students: Depending on the time and difficulty of your particular outdoor activity, you can depend upon junior high and even intermediate students to conduct simple 10-15 minute exercises outdoors with small groups of younger students. It is mutually beneficial if properly planned and supervised. Contact the Counseling Office in each school for aides.

3. Parents: Find a parent who is willing to assume an active role in assisting you with learning activities outdoors.

   Also, why not organize parent work parties after school to improve outdoor laboratories for learning on or near elementary school sites?

4. Docent Aide Programs of Community Organizations: For further information, contact your school district's Coordinator of Community Volunteers.

B. LESSON PLANNING

AREAS AVAILABLE FOR USE

A. School Site: Your own school site is rich in opportunities for environmental observation, learning, beautification, and improvement.

When you have seen your own school site, why not schedule a field trip to another school site?

B. Neighborhood Parks: Check your city map and plan a hike to the nearest park or public natural area. What are its unique characteristics and experiences for learning?

C. Special Attractions: Included here are areas such as Marshall Outdoor Laboratory, Chase Lake Bog, State and National Parks and Forests and other public or private areas permitting your use for education.

PREPARE THE GROUP IN ADVANCE

Where to Go

The first prerequisite for a site is that it provide what you want the children to see or do. The closer it is and the easier it is to get to, the better.

First, the teacher must become acquainted with the descriptive features of the area and with its significance. But you should go beyond merely identifying the flora and fauna or the outstanding physical features of the facility. You should take a close, analytical look around the site and decide which of its characteristics are relevant to people and environmental education in terms of your subject or discipline.

When you find something interesting, tie a piece of yarn near to it to help you find it when you want to show it to the rest of the class.

A. Motivation: Discuss the purpose of the trip with the class beforehand. If the children don't know what to look for, they will become bored and restless quickly. If they are absorbed in a problem, they may maintain interest for a long time. You should know what you want the children to look for before you start out, even if it is stated in only the most general terms.

Be prepared to cover at least some of the field trip objectives given to you by your group during your planning sessions.

B. Materials: Take as little as possible with you; the less equipment, the better. What you decide to take depends on the purpose of the trip. You may want the children to have pencils and notepads. Pieces of yarn can serve as markers for interesting discoveries made by the children. Magnifiers, maps or compasses may be very useful, but you risk loss or damage.

If you want to have them along, take as few as you can and put each one in the specific care of a responsible child.

If you intend to collect specimens, you will need appropriate equipment such as plastic bags,etc. You may also want to carry a camera. Collecting on the site is done only with special permission and is generally discouraged; therefore, bottles, nets, traps,

or other cumbersome and often dangerous paraphernalia should be left at home. Students saddled with the responsibility of comprehensive notetaking or with long checklists of things to observe, are often so busy recording and searching for specifics that they rarely get the big environmental picture.

Reference materials to aid in identification are handy, but not so essential that the expedition be weighted down with them.

The on-site experience should be primarily observational. Work best accomplished in the classroom, such as research, calculations, and more academic studies, should not be attempted at the environmental study area, but rather left to the post-site lessons back in the classroom.

The best guides as to what to take along are the activities most suited to the site and the subjects to be studied there. 1) If the on-site experience is to include identification of objects, the pre-site studies should include enough information so that the students know what to look for. 2) If, on the other hand, the on-site experience is to allow the students the excitement of making discoveries, there should be enough guidance - in the form of pertinent questions - to direct their observations toward the given goal. 3) When the environment is to be used as a vehicle for discussion, as in a social science field study, there should be a predetermined understanding of what environmental on-site observations will best motivate the students.

4) A research trip, though open-ended and allowing students a great deal of freedom, should have specific learning objectives.

II. ACTIVITY

A. LOGISTICS

1. Review your student-made rules and define your boundaries with easily recognized landmarks.

2. Explain that this is an outdoor classroom, and that the students should act like students.

3. Ask students to go to the restrooms and get a drink of water before the trip starts.

4. Explain that you will raise your hand to get the group's attention while on the trail. This should serve as an automatic signal for them to stop where they are and remain quiet.

5. When students see or hear the established signal, they should immediately gather around the teacher or in a semi-circle around a point of interest.

6. Whistles are disturbing to children, other groups, and wildlife and should not be used except in an emergency when everyone is called to assemble and return to the school at once. In such a case, the children should be taught to recognize one internationally accepted signal for distress, which is three short blasts on a whistle.

7. There are occasions, depending on the nature of the trip, when the "Buddy System" works just as well on field trips as at the waterfront.

8. Before leaving, have students count off. Before returning from the field, count off again.

9. The teacher or another adult who is familiar with the area should lead the group. Any other arrangement must remain in control (sight and sound) of the adult leader at all times.

10. It is most essential to have a responsible person at the rear at all times.

11. Have students play follow the leader, in single file, when you want to arrange them in a semi-circle around a particular point of interest.

12. Be quiet and move slowly so that you do not disturb the creatures that live there.

13. Watch the length of the line. Don't make the trip a marathon. Move out rapidly at first, and then proceed according to the group's ability. Pace is determined by the slowest walker. Don't make walking a chore. Change the speed of your pace occasionally. It helps to maintain interest.

14. Always remember to stay on the trail, watch your feet, display good outdoor manners and practice good conservation.

15. Keep stops short. When choosing resting places, try to find an interesting site to accommodate the group: A hilltop or hillside with a panoramic view; a stream or lake side; beside a gravel pit; at the dooryard of an abandoned farm;

15. (continued)
at the edge of a forest. Avoid poisonous plants. While resting, check on the condition of your students, as well as cameras, compasses, sketch pads, and exchange of information.

16. Try a different route if a return trip to the starting point is necessary. It helps to keep up interest.

17. Conclude the trip on an interesting note.

B. LESSON PLANNING

TEACHING TECHNIQUES

1. Involve the group actively during the trip as much as possible. Emphasis should be placed on doing. Look for things you have talked about. Emphasize self discovery. Allow time for free exploration. Encourage individual curiosity, investigation and sharing of discoveries with the rest of the group. Encourage use of all five senses whenever possible. Encourage the children to taste, smell, hear and see.

2. Avoid talking about something while on the trail until the entire group has caught up and you have their attention. If possible, try to get the group around you before you start talking.

3. Project your voice. Lift chin up and talk up and over those in front, when the group cannot gather around you but is strung out in a long line. Direct your voice to the last person in the line.

4. Watch your vocabulary, especially natural history and conservation jargon which may be new to the children.

5. Avoid identification for its own sake. Identification and uses of plants and materials helps, but it is not necessary to be a walking encyclopedia. Even Indians did not know all of the oaks, but they knew which acorns were good to eat.

6. Repeat out loud questions directed to you from the group so that everyone hears the question.

7. Talk conversationally. Lecture as little as possible. Ask leading questions to stimulate participation. Answer a child's question with a question which will guide him toward giving the correct answer himself. Don't, however, belabor this technique. Don't bluff. If you can't answer the question, say so, then suggest that the student investigate the resources for an answer.

8. Make it exciting. Be enthusiastic even over something you have noticed before. Remember, to the group it is new. Maintain a feeling of adventuring. Remember that there can be a significant difference between excitement and learning. Excitement should be delicately channeled toward interest. If you become the eyes and ears of your inexperienced charges, you will soon find that your sensitized students will serve as additional eyes and ears for you. They will call to your attention things that you would ordinarily overlook.

9. Prepare for surprises. Take advantage of teachable moments! If a child discovers something exciting, stop what you are doing, if possible, even if what the child wants to share with the group has little or nothing to do with whatever subject you are covering, and allow him to talk about his discovery. You can direct the group's attention back to your subject later. Use tact in keeping the students' facts straight to avoid discouraging self-expression. Avoid getting off on a tangent for very long, unless you all agree that a new study area is more important than the original purpose of the trip.

9. (continued)
So many things that can initiate learning out-of-doors are sometimes overlooked - buds on twigs, a bird with something in its beak, an ant dragging a caterpillar along the ground, the direction in which dandelion fluff is blowing, the position and phase of the daytime moon.

Any single observation can be the beginning of exciting exploration and lead to the joy of further discovery.

Every observation leads to a question: What is inside buds? Why doesn't the bird swallow the worm in its beak? Where is the ant going with the caterpillar? What happens to the dandelion seeds after they blow away?

The most interesting questions are questions that do not have neat, precise answers, but this should not prevent your investigating them anyway. The out-of-doors is so full of interacting things, that answers are always new and interesting and different.

10. Collecting Specimens: The field trip may lay the groundwork for activities you will want to do in the classroom. Collect only those things as are absolutely necessary for such follow-up, because it is important that the children learn good conservation habits.

The basic rule is to leave a natural habitat undisturbed. Replace anything you move. Avoid stepping on plants or animals whenever possible. If an animal is caught and observed, it should be put back where it was found - allowed to "go home."

The field trip should be distinguished from a collecting expedition, which would be better carried out by you alone or with a few selected students.

Make all collections in accordance with the law or other prescribed regulations, and try to leave the place in as good, or better, condition than you found it.

III. POST-ACTIVITY

AFTER THE TRIP - LET THE MEMORY LINGER ON

Some leaders like to have group evaluations before a trip is concluded, or at a later time. In some instances, an evaluation is not necessary.

CREDITS

LEADING CHILDREN IN THE FIELD, U.S. Forest Service, R-6, Portland, Oregon. PUTTING CONSERVATION TO WORK, Teaching Aid #4, August 1965.

LIVING THINGS IN FIELD AND CLASSROOM, "Planning Any Type of Trip," pps. 97-99, Minnesota Math and Science Teaching Project, University of Minnesota, copyright 1969.

MAN AND HIS ENVIRONMENT "Preparing to Use the Environmental Study Area," pps. 16-20, National Education Association, 1970.

SUGGESTIONS FOR OUTDOOR FIELD TRIPS Ernest V. Blohm, Executive Secretary, Michigan Interagency Council for Recreation, Lansing Michigan, April 19, 1966.

TIPS FOR TRAIL LEADERS
Charles Holtzer, Consultant,
Conservation and Outdoor Education,
Colorado Dept. of Education,
September 1968.

RESOURCES, BACKGROUND INFORMATION,

AND SPEAKERS

DEPARTMENT OF ENVIRONMENTAL HEALTH
University of Washington (543-3620)
Tours of facilities for all grade levels.

U.S FOREST SERVICE
Pacific N.W. Region (R-6)
Motion picture films available in Region 6 library, available on loan for educational purposes to schools, civic groups, churches.
Write to: WASHINGTON STATE FILM LIBRARY
Olympia, Wash. 98504 (206-753-3390)

DEPARTMENT OF CIVIL ENGINEERING: Air and Waste Quality Control
University of Washington
Tours and information.

EDMONDS RECREATION AND PARKS
Subject: Park Acquisition and/or Development
Rod Garretson, Dept. Director
Subject: Park Management
Rod Garretson or Don Burton, Park Superintendent
Subject: Recreation Program - Correct Park Usage, etc.
Doug Schafer, Recreation Supervisor

SNOHOMISH COUNTY PUD
Subject: Energy
Dick Downie, Environmental Coordinator
Don Rider, Public Relations

SNOHOMISH COUNTY HEALTH DEPARTMENT
Subject: Nursing
Ann Wilson, Kathy Carrol (259-9386)
Subject: Environmental Health
Sewage - Charles Mangum (259-9473)
Food Programs - includes restaurants, bakeries, itinerant food (circuses, carnivals, etc.), meat markets.
School, Solid Waste, Camping Areas, Mobile Home Courts, Chemical and Physical Health Hazards Unit, Rodent Control - Byron Robertson (259-9499)
Water and Noise - Gary Fraser (259-9499)
Epidemiology Unit - Dr. Luke (259-9473)
V.D. Section

THE INSTRUCTOR PUBLICATIONS, INC.
Subject: Ecology Posters #750
Dansville, NY 14437

WASHINGTON LUNG ASSOCIATION
216 Broadway East
Seattle, WA 98102
Contact: Mr. David L. Chivers, Regional Program Director
For: "Our Polluted Air" Mobile Workshop (one month in advance), various air pollution pamphlets and health information, films also available on request.

EDUCATIONAL SERVICES CENTER
Bill Hamilton (778-8965) or John McAdam (778-8658)
Information and resources

SEATTLE AUDUBON SOCIETY
712 Joshua Green Bldg.
Seattle, WA 98101 (622-6695)

FILMS

Numbers in parentheses immediately following titles indicate lengths of film in minutes. C for color; BW for black and white.

Conservation

A MATTER OF TIME	Conservation Foundation 30 East 40th Street New York, N.Y.
PARADISE POLLUTED	Roy Wilcox Productions 301 Allen Hill Meriden, Conn.
THE PERSISTENT SEED	National Film Board of Canada Canadian Embassy 1746 Mass. Ave. NW Washington, D.C. 20036
WITH EACH BREATH	New York State Air Pollution Control Board 84 Holland Avenue Albany, N.Y.

CONSERVATION AND BALANCE IN NATURE	International Film Bureau 332 South Michigan Avenue Chicago, Ill. 60604
OUR CHANGING ENVIRONMENT	Encyclopedia Britannica Films, Inc. 1150 Wilmett Avenue Wilmett, Ill.
SO LITTLE TIME	USDI Sport Fisheries and Wildlife 710 N.E. Holladay Portland, Oregon
TOWARDS TOMORROW	BBC through British Embassy Washington, D.C.
3 YOUNG AMERICANS IN SEARCH OF SURVIVAL	3M Company Television Production
WILD RIVERS (28)	Modern Talking Picture Service 1212 Avenue of the Americas New York, N.Y. 10036
CLEAN WATERS (20) Free	U.S. Public Health Service Audiovisual Facility Chamblee, Georgia 30005
NATURE'S PLAN (14) $6.00	Encyclopedia Britannica Films 202 East 44th Street New York, N.Y. 10017
IT'S YOUR DECISION - CLEAN WATER (14 1/2)	Association Films 600 Grand Avenue Ridgfield, N.J. 07657
THE RIVER MUST LIVE (21) Free	Shell Oil Company, Film Library 450 North Meridan Indianapolis, Ind. 46204
TROUBLED WATERS (28) Free	U.S. Senate Public Works Committee Room 4204, New Senate Office Bldg. Washington, D.C. 20510
GREAT LAKES INVADER, THE SEA LAMPREY (13 1/2) Free	Bureau of Sport Fisheries and Wildlife 1002 N.E. Holladay Street Portland, Oregon
THE WHOOPING CRANE (14) Free	Bureau of Sport Fisheries and Wildlife

NATIONAL PARKS, OUR AMERICAN HERITAGE (17-c)	Seattle Public Library 4th and Madison Seattle, Wash. 98104
RETURN OF THE BUFFALO (10-BW)	Seattle Public Library
WOODLAND MANNERS (19-C)	Seattle Public Library
LIFE ON THE WESTERN MARSHES (15-C)	Seattle Public Library
LET'S KEEP AMERICA BEAUTIFUL (18-C) $1.50	Richfield Oil Company P.O. Box 75007 Sanford Station, Los Angeles, Calif.
WINGS OVER BLITZEN (39-C)	Bureau of Sport Fisheries and Wildlife 730 N.E. Pacific Street Portland, Oregon 97208

Most of the following films on conservation are available to teachers through their school district, or to anyone through Rarig's Inc., Audio-Visual Sales and Service, 2100 North 45th, Seattle, Wash.

CONSERVATION (10-BW)
TOPSOIL (10-C)
CASCADE MOUNTAINS (20-C)
WATER-FOUNTAIN OF LIFE (30-C)
WATER CONSERVATION (11-BW)
WHAT MAKES RAIN? (10-BW)
CONSERVING OUR NATURAL RESOURCES (18-C)
UNTOUCHED LAND (30-C)
LITTERBUG (8)
CITIES AND SUBURBS: METROPOLITAN (9-C)

Ecology and Enjoyment of Nature

The following films are free of charge. Write Conservation Film Center, P.O. Box 9163, Seattle, Wash. 98119

LIVING RIVER - GRAND CANYON (29-C)
WILDERNESS ALPS OF STEHEKIN (30-C)
GLACIER PEAK HOLIDAY (30-C)
BULLDOZED AMERICA (27-BW)
NORTH CASCADES (35 mm slide show with script)
THE REDWOODS (20-C)
THE MYTHS AND THE PARALLELS (27-BW)
BEACH HIKE (17-C)
TWO YOSEMITES (10-C)
GLEN CANYON (28-C)
WASTED WOODS (15-C)
HELLS CANYON (33 mm slide show with script)

Most of the following films on ecology and enjoyment of nature are available to teachers through their school district or to anyone through Rarig's Inc., Audio-Visual Sales and Service, 2100 North 45th, Seattle,Wash.

THE SEA (26-C)
WORLDS OF DR. VISHNIAC (C)
COLUMBIA FRONTIER (27-C)
WORLD OF LITTLE THINGS (C)
BALANCE OF NATURE (17-C)
WHAT PLANTS NEED FOR GROWTH (10-C)
ECOLOGY (24-C)
LIFE STORY OF THE OYSTER (11-C)
DISTRIBUTION OF PLANTS AND ANIMALS (16-C)
PLANKTON, PASTURES OF THE OCEAN (10-C)
ANIMAL WAR-ANIMAL PEACE (27-C)
OUR MISTER SUN (60-C)
FATHER OCEAN (10-C)
WHY PLANTS GROW WHERE THEY DO (11-C)
CANOEING THE BIG COUNTRY (14-C)
DESERT COMMUNITY (12-C)

YELLOWSTONE: OUR FIRST NATIONAL PARK (15-C)
GRASS BLADE JUNGLE (11-C)
HERITAGE OF SPLENDOR (16-C)
AROUND THE BIG LAKE (17-C)
TRAIL RIDE (20-C)
LIFE IN THE OCEAN (11-C)
SPRING (9-C)
LIFE ON A DEAD TREE (11-C)
CONSERVATION: JOBS FOR YOUNG AMERICA (19-C)
LIFE IN THE OCEAN (11-C)
ANIMALS THAT LIVE IN THE SURF (11-C)
MARSH COMMUNITY (11-C)
THE DESERT (10-C)
ANIMAL LIFE AT LOW TIDE (11-C)
SPRING COMES TO A POND (13-C)
CAVE COMMUNITY (13-C)

WAY OF LIFE (Illustrates predatory tendencies of nearly all animals)	Wash. State Game Dept. 600 N. Capital Way Olympia, Wash. 98501
WILDERNESS TRAIL (1 -C)	U.S. Forest Service Regional Office P.O. Box 4137 Portland, Oregon
WILDERNESS ENCAMPMENT (27-C)	U.S. Forest Service Regional Office
NATURE NEXT DOOR (28-C)	Sierra Club 1050 Mills Tower San Francisco, Calif.
AN ISLAND IN TIME (28-C)	Sierra Club
THE GREAT SWAMP (30-C) (Documentary of a national wildlife refuge)	Bureau of Sport Fisheries and Wildlife Office of Regional Director 730 N.E. Pacific Street, P.O. Box 3737 Portland, Oregon
PATTERNS OF THE WILD (27 1/2-C) (Shows that the wildlife of a forest does not merely live in a forest, but as a part of it.)	Bureau of Sports Fisheries and Wildlife
BIRDS AND THEIR MIGRATION (18-C)	Bureau of Sports Fisheries and Wildlife

FOR THE PEOPLE - WILDLIFE REFUGE (22 1/2-C)	Bureau of Sport Fisheries and Wildlife
GREAT BLUE HERON AND THE SNOWY WHITE EGRET (15-C)	Bureau of Sport Fisheries and Wildlife
KNOW THE HAWKS (10 1/4-C)	Bureau of Sport Fisheries and Wildlife
OUR MAGIC LAND (12 1/2-C) (For primary)	Bureau of Sport Fisheries and Wildlife
WATER BIRDS (22 1/2-C) Walt Disney	Bureau of Sport Fisheries and Wildlife

The following films can be rented from National Audubon Society, 1130 Fifth Avenue, New York, N.Y. 10028. Prices range from $5.00 to $11.00. All are 16 mm sound films.

THE BALD EAGLE, OUR NATIONAL BIRD (35-C)
BEAVER VALLEY (32-C)
BIRDS OF THE COUNTRYSIDE (11-C)
BIRDS OF THE DOORYARD (11-C)
THE GOONEY BIRD (20-C)
ISLAND IN DANGER (25-C)
ISLANDS OF GREEN (24-C)
KENTUCKY'S FEATHERED RAINBOW (28-C)
LOOK DOWN (55-C)
A James W. Wilkie Film
THE LOON'S NECKLACE (11-C)
NATURE'S HALF ACRE (33-C)
POISONS, PESTS AND PEOPLE (55-BW)
THE TOUCH OF NATURE (54-C)
THE WINDOW (17-C)
THE WOOD DUCKS WORLD (30-C)
YOUR LIVING HERITAGE (12-C)
VILLAGE BENEATH THE SEA (90-C) ($50.00)

The following 16 mm films must be used in a sound projector. Massachusetts Audubon Society, South Great Road, Lincoln, Mass. 01773.

BEARGRASS GREEK (20-C)
BEAVER DAM (16-C)
GREEN CITY (30-C)
LAND OF THE PRAIRIE DUCK(25-C)
LIFE IN A TROUT STREAM (10-C)
LIFE IN THE WOODLOT (17-C)
MARSHLAND IS NOT WASTELAND (14-C)
OUR WILDLIFE HERITAGE (30-C)
POPULATION ECOLOGY (19-C)
SILENT SPRING OF RACHEL CARSON (57-BW)
THEIR HERITAGE (20-C) Free
WORLD IN A MARSH (23-C)
YOURS FOR A SONG (14-C)

The following films are available from the Seattle Public Library, Main Branch; free upon request.

AMERICA'S LAST FRONTIER (13-C)
LAND OF THE RED GOAT
OLYMPIC RAIN FOREST (10-C)
BETWEEN THE TIDES (20-C)
ALPINE WILDFLOWERS (11-C)
EDIBLE PLANTS OF FIELD AND FOREST (24-C)
FAMILY AFOOT IN THE YUKON (22-C)
MT. RAINER NATIONAL PARK (20-C)
ANIMALS OF ALASKA (11-C)
MARINE ANIMALS OF THE OPEN COAST (22-C)
CONIFER TREES OF THE PACIFIC N.W. (16-C)

FREE AND INEXPENSIVE MATERIALS

The following are good sources for free or low cost informational materials on Population, Conservation and Ecology. Write for information about available materials.

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN
2401 Virginia Avenue, N.W.
Washington D.C. 20037
Resource directory on pollution control - 75¢.
Anti-pollution pamphlets and study guide - 75¢.

AMERICAN FORESTRY ASSOCIATION
919 17th Street N.W.
Washington, D.C. 20006
Pamphlets and bulletins. "You Can Be a Conservationist" by O.E. Randall.

CLEAN WATER
Washington, D.C. 20242
Suggestions about what communities can do to combat water pollution. Free.

CONSERVATION FOUNDATION
1250 Connecticut Avenue N.W.
Washington, D.C. 20036
Variety of pamphlets and articles dealing with the many aspects of ecology.

ENVIRONMENT MAGAZINE
438 North Skinker
St. Louis, Missouri 63130
Monthly publication dealing with effects of technology on the environment, published by Committee for Environmental Information. Student subscription - $5.00 per year.

INTERSTATE PRINTERS AND PUBLISHERS
Danville, Illinois 61832
Bibliography of books and other teaching materials in conservation field.

ISAAC WALTON LEAGUE OF AMERICA
1326 Waukegan Road
Glenview, Illinois 60025
"Clean Water - It's Up to You," excellent pamphlet on what local citizens can do about water pollution. Free. Monthly conservation newsletter.

LOCAL TUBERCULOSIS AND RESPIRATORY DISEASE ASSOCIATIONS
"Air Pollution Primer"

NATIONAL PARKS ASSOCIATION
1701 18th Street N.W.
Washington, D.C. 20036
Free or low-cost pamphlets and articles on thermal pollution, noise pollution, pesticides, and basic ecology. Excellent.

NATIONAL WILDLIFE FEDERATION
1412 16th Street N.W.
Washington, D.C. 20036
Conservation Directory - a guide to all state and national sources of conservation and environment information. $1.50. Informational packets on ecology and pollution - special packets from elementary to adult level. Excellent. Monthly newsletter.

PLANNED PARENTHOOD, WORLD POPULATION
515 Madison Avenue
New York, N.Y. 10022
Bibliography, film guide and following reprints: "Eco-Catastrophe," by P. Ehrlich; "300 Million Americans Would be Wrong," by D. Lilienthal; "The Human Race Has Maybe 35 Years Left,: by D. Lyle.

POPULATION REFERENCE BUREAU
1955 Massachusetts Avenue N.W.
Washington, D.C. 20036
Good bibliography, source list, and film guide on population. Minimal cost.

PORTLAND CENTER FOR CONTINUING EDUCATION
P.O. Box 1491
Portland, Oregon 97207
Attn: Mr. Lawless
"Observing our Environment, " - $3.00, relating elementary students to our environment.

PROJECT MAN'S ENVIRONMENT
National Education Association
1201 16th Street N.W.
Washington, D.C. 20036
Information on curriculum (K thru 12) environmental study areas.

PUBLIC AFFAIRS INFORMATION SERVICE
U.S. Government Printing Office
Washington, D.C. 20401

PUBLIC AFFAIRS PAMPHLETS
381 Park Avenue South
New York, N.Y. 10016
Pamphlet #421 - "An Environment Fit for People" - 25¢
#403 - "The Battle for Clean Air" - 25¢

SIERRA CLUB
Mills Tower
San Francisco, Calif. 94104
List of publications, pollution, population information, protection of scenic areas.

SUPERINTENDENT OF DOCUMENTS
Government Printing Office
Washington, D.C. 20402
"No Laughing Matter" - book of syndicated cartoons on air and water pollution (70¢). "Primer on Waste Water Treatment" - current and possible future methods of treating sewage and industrial waste (55¢). "Showdown" - picture pamphlet discussing "showdown" for water quality (65¢). "From Sea to Shining Sea" - presentation of environmental situation of U.S. with good bibliography, film list, and resource guide ($2.50).

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Public Health Service
Bureau of Disease Prevention and Environmental Control
Washington, D.C. 20201

U.S. GOVERNMENT PRINTING OFFICE
Washington, D.C. 20401
Bureau of Census; Bureau of Indian Affairs; Bureau of Land Management; Bureau of Reclamation; Department of Agriculture; Department of Health, Education and Welfare; Department of the Interior; Forest Service; National Park Service; Office of Education; Soil Conservation Service.

WILDERNESS SOCIETY
729 15th Street N.W.
Washington, D.C. 20005
Reports, pamphlets, reprints on preservation and use of our natural heritage.

ZERO POPULATION GROWTH
367 State Street N.W.
Los Altos, Calif. 94022
Newsletters, brochures, ecology leaflets, reprints.

You may also write to your local:
- Chamber of Commerce
- Historical Societies
- Preservation Societies
- State Offices
- State Office of Public Instruction
- State Offices:
  - Agencies of Pollution, Bureau of Fisheries, Fish and Wildlife Service, Wildlife Commission.

PAMPHLETS AND OTHER PUBLICATIONS

A CONSERVATION HANDBOOK - 50¢ Ordway, Samuel H., Jr.	The Conservation Foundation, 1949 New York
OBJECTIVES AND CONTENT OF CONSERVATION EDUCATION FOR AMERICAN YOUTH - 50¢	U. Press, Ohio State University, 1950, Columbus Ohio
MATERIALS FOR TEACHING CONSERVATION AND RESOURCE USE - 35¢	National Assoc. Biology Teachers, Interstate Printers and Pub., Danville Illinois.
RESOURCES FOR A GROWING POPULTION, Seaton, Fred - 25¢	Supt. of Documents, U.S. Govt. Printing Office, Washington, D.C.
THE GLORY TRAIL - One copy free Swift, Ernest	The National Wildlife Federation 1412 16th St. N.W. Washington, D.C. 20036
THE PACIFIC NORTHWEST - $1 Zim, Herbert S.	Golden Press, New York
THE CONSERVATION OF OUR NATURAL RESOURCES, Seaton, Fred - 20¢	Conservation Bulletin 3-9, Supt. of Documents, above
CAREERS FOR WOMEN IN CONSERVATION - Free	U.S. Dept. of Labor, Leaflet 50, Women's Bureau, Washington, D.C.
WATER AND OUR FORESTS AIB-71 - 10¢	U.S. Dept. of Agriculture Forest Service, Washington, D.C.
FORESTS AND THE NATURAL WATER CYCLE K-1 - Free	U.S. Dept. of Agriculture
FOREST AND WATER 0-28 - Free	U.S. Dept. of Agriculture
HOW A TREE GROWS (16 x 12 poster) - 10¢	U.S. Dept. of Agriculture

FOREST REGIONS OF THE U.S.	U.S. Dept. of Agriculture
BIRDS, CN-1 - Free (There is a series of conservation notes number CN-1 through CN-21 available for education.)	Bureau of Sport Fisheries and Wildlife Dept. of Interior Washington, D.C. 20240
ENDANGERED WILDLIFE SERIES - Free (Numbered EWS-1 through EWS-5)	Bureau of Sport Fisheries and Wildlife
SOMETHING ABOUT HAWKS, SA-2 - Free	Bureau of Sport Fisheries and Wildlife
TREES OF WASHINGTON - Free (Extension Bulletin #440)	Cooperative Extension Service College of Agriculture Washington State University Pullman, Wash.
OFF ON THE RIGHT FOOT (A guide to proper wilderness use)	The Wilderness Society 729 15th Street N.W. Washington, D.C. 20005
ACTION FOR CLEAN WATER	The Wilderness Society
THE NEW CONSERVATION	The Wilderness Society
NEW CHALLENGES FOR WILDERNESS CONSERVATIONISTS	The Wilderness Society
A NEW LOOK AT OUR CROWDED WORLD Stewart, Maxwell, #393 - 30¢	Public Affairs Supt. of Documents U.S. Government Printing Office Washington, D.C.
PROGRESS IN THE PREVENTION AND CONTROL OF AIR POLLUTION - 30¢	Public Affairs
VEGETATION OF OREGON AND WASHINGTON (PNW Circular #80) - Free	Pacific N.W. Forest and Range Experimental Station P.O. Box 3141 Portland, Oregon 97208

LOCAL CONTACTS

Local decision-makers responsible for environmental quality:

CITY COUNCILMEN
Cities of Lynnwood, Edmonds and Mountlake Terrace

CITY PLANNING COMMISSIONS

SOUTH SNOHOMISH CHAMBER OF COMMERCE

How do present and future business needs affect planning for a quality environment? Will there have to be changes in business activity in order to solve environmental problems?

SNOHOMISH COUNTY PLANNING DEPARTMENT

What are comprehensive land use plans? How closely are these followed? Who is responsible to see that land use plans are complied with?

SNOHOMISH COUNTY PLANNING COMMISSION

How are Planning Commission members selected? What is their responsibility? How does their work relate to that of the Snohomish County Planning Department? Why is there a Planning Commission and not just a Planning Department? Why are there rezones and other exceptions to land use plans? How are these exceptions obtained?

SNOHOMISH COUNTY HEALTH DEPARTMENT

Environmental Health Division

What does the department have to do with problems of sewage disposal, water supplies (Spada Lake), food establishments, schools, tourist facilities, rodent and insect control, swimming pool and bathing beaches, refuse disposal?

SNOHOMISH COUNTY ENGINEER

What is the role of the County Engineer in making decisions on roads, transportation and other capital improvements in Snohomish County?

CITY DEPARTMENTS OF CITIES OF LYNNWOOD, EDMONDS AND MOUNTLAKE TERRACE

Building Department - What is the purpose of building codes? How are codes enforced? Are there exceptions? Why? How are decisions on exceptions made? What about conflicts between creating and enforcing of codes on the one hand, and protecting property rights on the other? Are there basic principles for resolving such conflicts?

Planning Department - What is the current city comprehensive plan? Where should businesses go? Apartments? Other multiple residences? What about lot sizes, etc.? What power does the Planning Department have? How are exceptions to the comprehensive plan decided? How does a city comprehensive plan relate to the county comprehensive plan? Is there some relating of local to regional planning?

Recreation and Parks Department

SNOHOMISH COUNTY ECONOMIC DEVELOPMENT COUNCIL
This organization is comprised of business and other organizations representatives to study and suggest to local land use decision-makers how area-wide comprehensive planning could take place for economic development of areas like Snohomish Valley.

Contact: Mr. Lloyd Repman, Chairman (Al 2-6236)
Monte Cristo Hotel
Everett, Washington

CITY OF EDMONDS
250 5th West
Edmonds, Wash. 98020
City Engineer, Planning Department, Recreation and Parks, Police Department, Water Department (200 Dayton, Edmonds, Wash. 98020)

ALDERWOOD WATER DISTRICT
City Center
Alderwood Manor, Washington 98036

CITY OF BRIER
City Hall
23303 Brier Rd.
Brier, Washington 98036

CITY OF LYNNWOOD
19100 44th Ave. West
Lynnwood, Washington 98036

CITY OF MOUNTLAKE TERRACE
Mountlake Terrace, Washington 98043

TOWN OF WOODWAY
11422 238th S.W.
Edmonds, Washington 98020

LYNNDALE GARDEN CLUB

LOUISE MARSHALL
16812 36th Ave. West
Lynnwood, Washington 98036
Author and editor of environmental and recreational materials.

SOUTH SNOHOMISH COUNTY COUNCIL ON HUMAN RELATIONS

PORT OF EDMONDS
456 Admiral Way
Edmonds, Washington 98020

SOUTH COUNTY SENIOR CITIZENS CENTER, INC.
220 Railroad Avenue
Edmonds, Washington 98020

MARIAN KOHN
1023 241st Place S.W.
Edmonds, Washington 98020
Parent and Research Associate, Zoology Department, University of Washington.

SNOHOMISH COUNTY HEALTH DEPARTMENT
South County Office
19701 Scriber Lake Road
Lynnwood, Washington 98036

SNOHOMISH COUNTY PARKS DEPARTMENT
Everett Courthouse (259-9317)
Everett, Washington

SNOHOMISH COUNTY PLANNING DEPARTMENT
Everett Courthouse (259-9311)
Everett, Washington

SUPERINTENDENT OF SCHOOLS
ISD 109
Everett Courthouse (259-0621)
Everett, Washington

SNOHOMISH COUNTY P.U.D. #1
21018 Highway 99
Lynnwood, Washington 98036

BOY SCOUTS OF AMERICA
Evergreen Council, Inc.
1615 1/2 Hewitt Avenue
Everett, Washington

SNOHOMISH COUNTY ENVIRONMENTAL COUNCIL

ADDRESSES FOR AGENCIES LISTED IN THE FILM LISTS

Aetna

Aetna Life & Casuality
Audio Visual Services
151 Farmington Ave.
Hartford, Conn. 06115

A -S

Association-Sterling Films
866 3rd Ave.
New York, N.Y. 10022

Common

Commonwealth Film Distributors
1440 S. State College Blvd.
Bldg 6-K
Anaheim, Calif. 92806

EBEC

Encyclopedia Brittanica Educational Corp.
425 N. Michigan Ave.
Chicago, Ill. 60611

Ethyl

Ethyl Corp.
Corporate Public Relations Dept.
330 S. 4th St.
Richmond, Va. 23219

FAA

Federal Aviation Administration
Film Library AC-44.5
P.O. Box 25082
Oklahaoma City, Oklahoma 73125

GASP

Group Against Smog And Pollution
P.O. Box 2850
Pittsburg, Pa. 15230

JF

Journal Films, Inc.
909 W. Diversey Pkwy
Chicago, Ill. 60614

Motor

Motor Vehicle Mfg Assn, Inc.
320 New Center Bldg
Detroit, Mich. 48202

MTPS

Modern Talking Picture Service
2323 New Hyde Park Rd.
New Hyde Park, N.Y. 11040

MUE

Media For Urban Environment
75 Frost St.
Brooklyn, N.Y.

NAC

General Services Admin.
National Archives And Records Service
National Audiovisual Center
Washington, D.C. 20409

NBC

NBC Educational Enterprises
30 Rockefeller Center
New York, N.Y. 10020

NFBC

National Film Board of Canada
680 5th Avenue
New York, N.Y. 10019

Shell

Shell Film Library
450 N. Meridian St.
Indianapolis, Ind. 46204

LESSON OUTLINE

TOPIC: _____
LEVEL: _____
EST.TIME: _____
SUBJECTS: _____

I. LEVEL V OBJECTIVE

II. LEVEL VI OBJECTIVE

III. TEACHER BACKGROUND INFORMATION

IV. MATERIALS NEEDED

V. ACTIVITY

A. PRE-ACTIVITY _____ Time: _____

B. ACTIVITY _____ Time: _____

C. POST-ACTIVITY _____ Time: _____

VI. RESOURCES

VII. SUGGESTED ADDITIONAL ACTIVITIES